
SOUTHERN CALIFORNIA ACCELERATED RAIL ELECTRIFICATION PROGRAM



PHOTO BY SPACESHOTS INC.

Southern California Regional Rail Authority

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SOUTHERN CALIFORNIA ACCELERATED RAIL ELECTRIFICATION PROGRAM
:fb FINDINGS AND RECOMMENDATIONS

CONCLUSION

One of the primary goals of the Accelerated Rail Electrification Task Force was to develop a timeline, cost, and financing plan for reducing rail-related emissions through electrification by 2010. This study has accomplished that objective. As shown in Exhibit 1, thirteen routes were evaluated, including nine commuter routes, three freight routes, and a consolidated freight corridor.

As a result of the evaluation process, a phased implementation plan for electrification of these thirteen routes was developed assuming a construction spending limit of \$300 million per year in 1992 constant dollars. This phased program for electrification would be contingent on utility rate treatment, state and federal funding commitments, railroad participation, local funding commitments, and resolution of concerns about cost and cost-effectiveness.

Exhibit 2 illustrates the implementation schedule for the thirteen freight and commuter routes constrained by the annual funding targets and the completion date of 2010. As shown in the exhibit, electrification of the thirteen routes could physically be accomplished by 2009 for a total cost in 1992 dollars of \$3.26 billion. Exhibit 3 illustrates the annual expenditure requirements in 1992 dollars associated with the proposed implementation schedule.

KEY FINDINGS

1. Southern California Association of Governments (SCAG) has the institutional responsibility to draft Transportation Control Measures (TCMs) associated with mobile sources. These TCMs are submitted to the South Coast Air Quality Management District (SCAQMD) for incorporation into the Air Quality Management Plan (AQMP).

Rail Electrification is included in both the 1989 and the 1991 AQMP as Measure 14. Measure 14 required a cost feasibility and institutional analysis study be conducted. This Accelerated Rail Electrification Study provides the data to allow refinement of Measure 14 prior to submission to the U.S. Environmental Protection Agency for inclusion in the Federal State Transportation Improvement Plan.

2. Electrification of all thirteen routes included in this study would not accomplish the 2010 goal in the South Coast Air Quality Management Plan of 90% rail emissions reduction by 2010. Electrification of these mainline routes would accomplish a 76% reduction in NOx emissions by that date.

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3. Electrification of all 13 commuter and freight routes evaluated would cost \$3.26 billion (1992 dollars). Electrification of only the nine Metrolink commuter rail routes would cost \$1.45 billion (1992 dollars). These costs are in uninflated constant dollars and do not include the cost of locomotives, estimated to be an additional \$1.5 billion. In addition, these costs assume minimal vertical clearances and utility relocation at no cost to the SCRRA. Higher vertical clearances, as requested by the railroads, would significantly increase these costs as it would require raising of over 20% of existing structures.
4. Based on the cost-effectiveness analyses conducted for this study, electrification of both commuter and freight services could be cost-effective, in terms of the capital cost per ton of oxides of nitrogen (NOx) emissions reduced. Today, other large industries have NOx control requirements that cost \$25,000 to \$45,000 per ton.

Assuming a \$4.05 million average capital cost per route mile for commuter and freight service, the cost per ton of NOx reduced would range from \$3,900 to over \$10,900 depending on assumptions and calculation methodologies.

If only commuter rail service were to be electrified, the 90% emissions reduction would not be met, and the electrification of these routes without freight participation would not be cost-effective. Assuming a \$3.47 million capital cost per commuter route mile, the cost per ton of NOx reduced for commuter rail electrification would range from \$48,000 to over \$183,000 per ton of NOx reduced.

5. Financing regional rail electrification would require new sources of federal, state, local, and private funding, and would involve the investor- and municipally-owned utilities and the railroads. Rate treatment of roughly 40% of capital costs would have to be considered.
6. Additional access rights would be required for rail electrification on commuter rail corridors operating through trackage rights agreements. Environmental documentation would also be required to comply with the National Environmental Policy Act (NEPA) and the California Environmental Policy Act (CEQA).
7. Based on the results of this study, alternative fuels including cleaner diesel, methanol, and CNG/LNG offer highly promising approaches for reducing emissions on rail-related facilities not suitable for electrification (such as yards and shops) and as transition and/or longer term approaches on selected routes.

RECOMMENDATIONS

1. The Southern California Regional Rail Authority should commit to be a participant in meeting the targeted rail emission reduction by 2010 established by Measure 14 of the 1991 Air Quality Management Plan and in updates to this Plan.
2. In the interim, the SCRRA should proceed with expeditious implementation of the five (5) Metrolink commuter rail lines, under diesel operation initially. The Metrolink Commuter Rail system is included as a Tier I project in the 1991 AQMP. Metrolink shall utilize the cleanest possible diesel and clean fuels technology, and should not preclude future conversion to electrification in undertaking its capital projects.
3. The SCRRA should select Commuter Rail Route 6 - Riverside to Los Angeles via Union Pacific - as an initial project for a Phase I program. This Phase I program should include parallel investigation of both electrification and alternative fuels. The work program would include preliminary engineering on the selected route, and field testing of cleaner diesel, methanol, and CNG/LNG powered trains. At the conclusion of this Phase I effort, the SCRRA, SCAG, SCAQMD, and the freight railroads and other affected agencies should be prepared to adopt a strategy for rail emission reduction to achieve the 2010 target called for in Measure 14 of the 1991 AQMP or in revisions to this Plan.
4. A Rail Electrification Funding Task Force should be formed immediately. This Task Force would be composed of principal representatives from the potential funding partners including California Transportation Commission (CTC), Federal Railroad Administration (FRA), SCRRA, SCAG, the private railroads, the utilities, and Caltrans. The purpose of the Rail Electrification Funding Task Force would be to develop a funding plan to implement Measure 14. The Task Force would be chaired by a designated member of the CTC.

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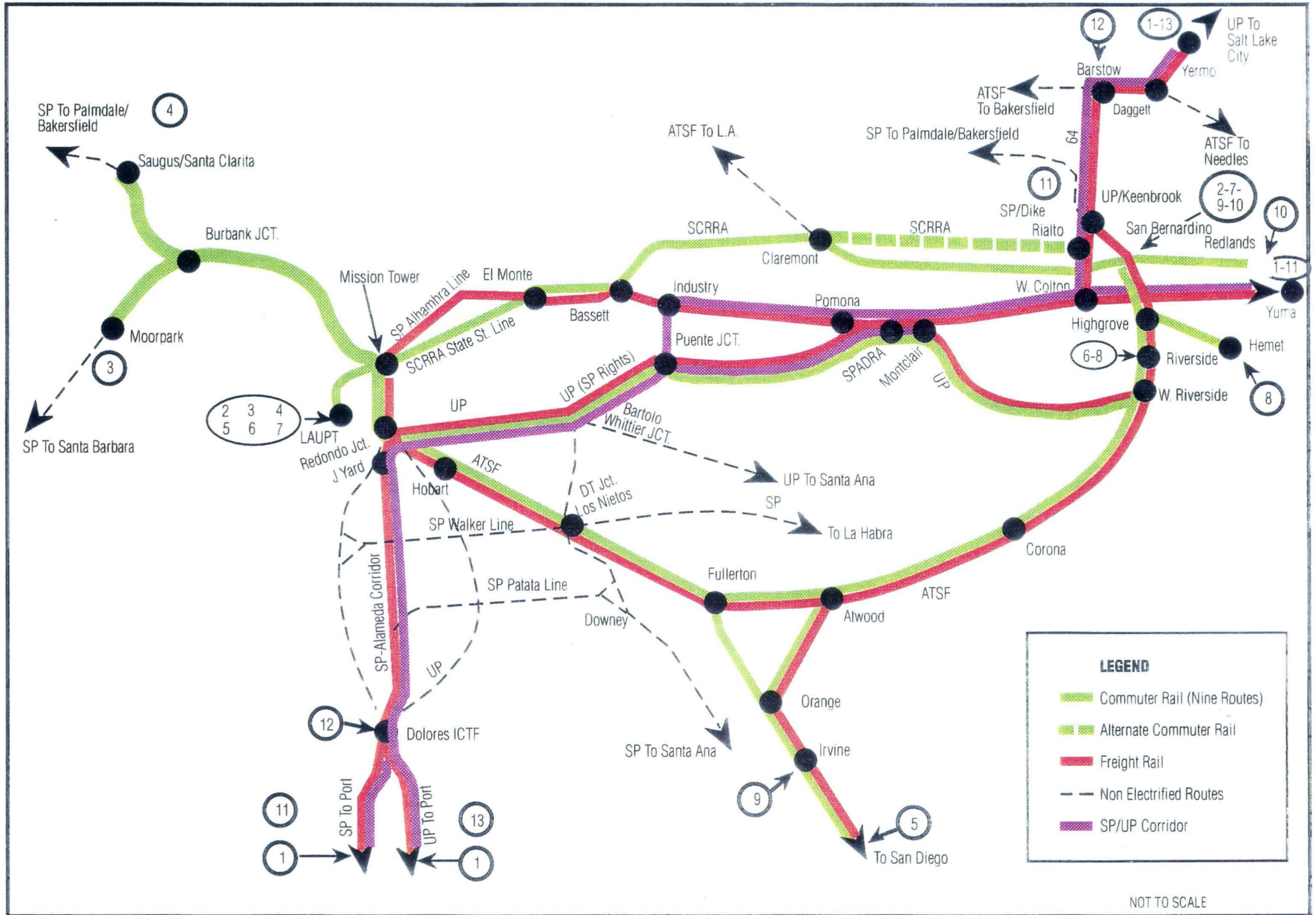
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Findings

PHASE I ACTIVITIES

1. Determine Funding Sources for Phase I.
2. Initiate Discussions with the Railroads Regarding:
 - Definition of the Consolidated Corridor
 - Access Rights
 - Reasonable Clearance Requirements
 - Construction Scheduling
 - Financial Participation
 - Phasing of Freight Electrification
 - Proration of Operating and Maintenance Costs
3. Select an Initial Route for Preliminary Engineering for Electrification
4. In Parallel with Preliminary Engineering Initiate Demonstration Projects for Alternate Fuels:
 - Clean Diesel
 - Methanol
 - CNG/LNG
5. Negotiate Railroad and Utility Agreements and Define Roles and Responsibilities During Design and Construction
6. Secure Funding Commitments:
 - Rate Treatment Financing
 - State, Federal, Railroad, and Local
7. Develop Revised Measure 14 Language



LEGEND

- Commuter Rail (Nine Routes)
- Alternate Commuter Rail
- Freight Rail
- Non Electrified Routes
- SP/UP Corridor

NOT TO SCALE



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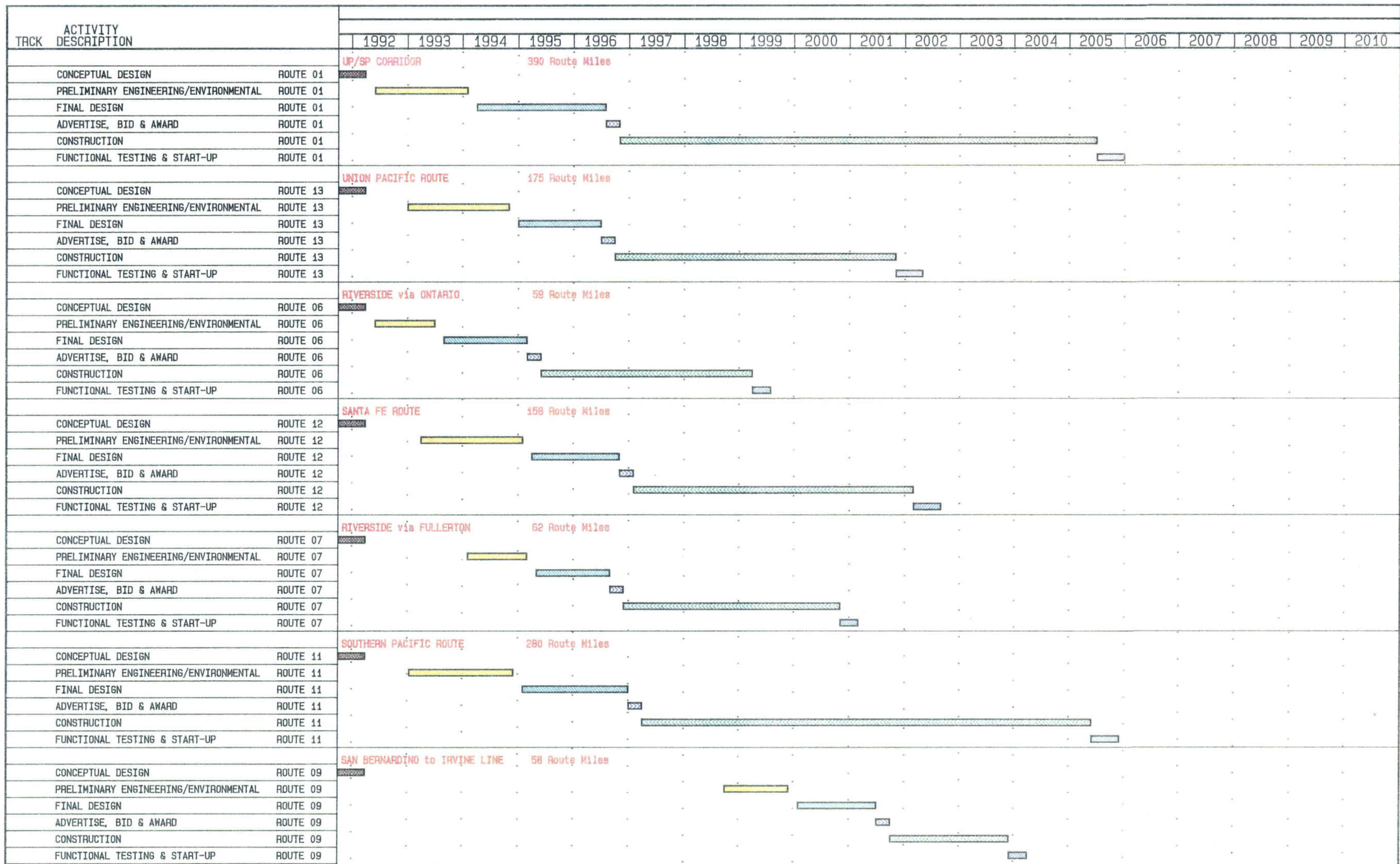
TABLE ES-8

Regulatory Approval Process

Anticipated Task Duration

Investor-Owned Utilities	
• CEQA Compliance and Project Approval/Disapproval	
- CPUC as Lead Agency	6-12 months
- CPUC as Responsible Agency	6 months or 180 days <u>from FEIR Certification</u>
	6-12 months*
Municipal Utilities	
• CEQA Compliance and Project Approval/Disapproval	
- City as Responsible Agency	6 months or 180 days <u>from FEIR Certification</u>
	6-12 months*

* The Permit Streamlining Act (Gov. Code §65950) establishes maximum time limitations within which an Agency must act. The law does provide for a one-time 90 day extension with the Applicant's consent. The time limits established by the PSA commence when the Application is accepted by the Agency as complete.



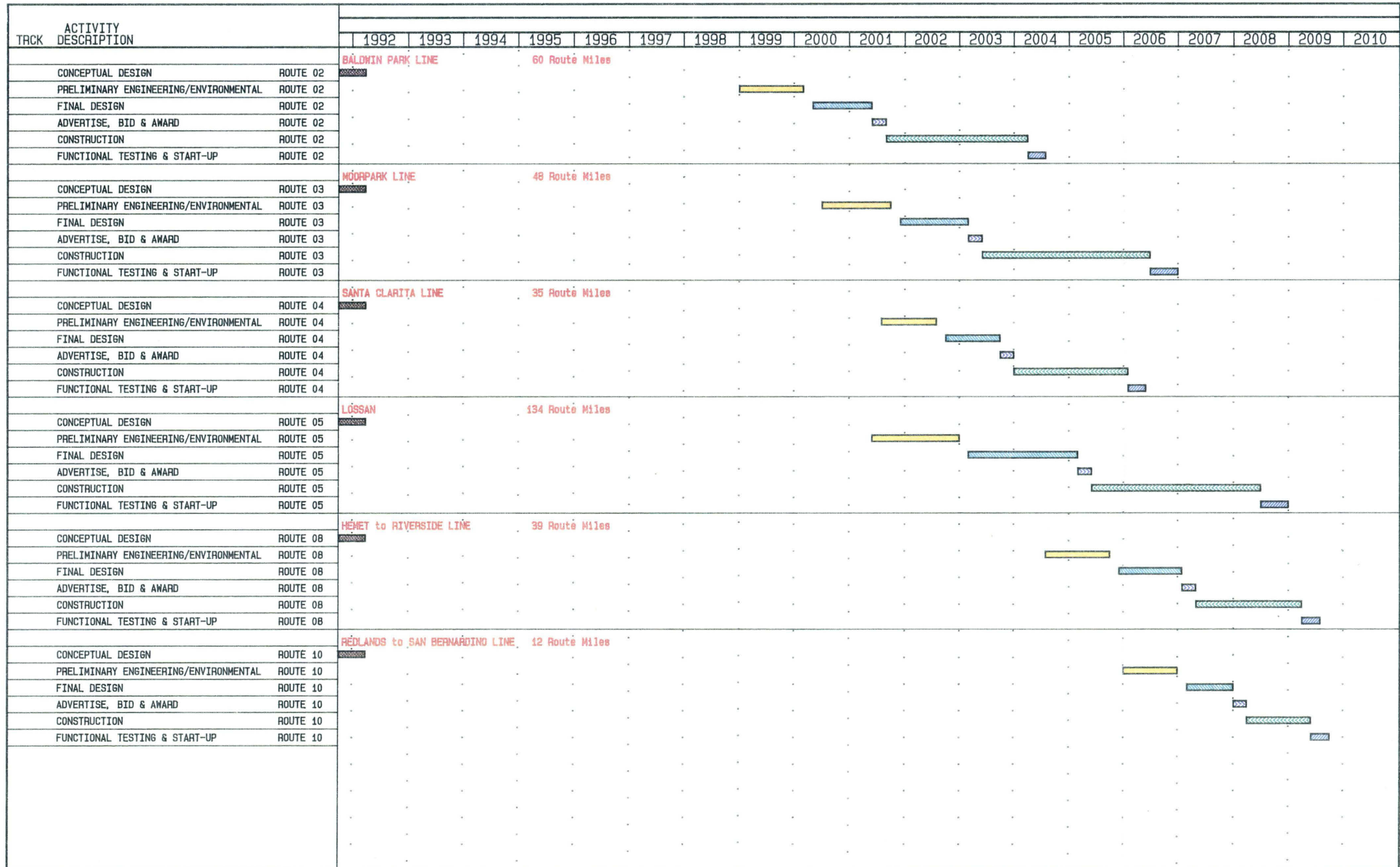
Primavera Systems, Inc. 1984-1991

WBS LEVEL 5
 ■ CONCEPTUAL DESIGN
 ■ PRELIMINARY ENGINEERING / ENVIRONMENTAL
 ■ FINAL DESIGN
 ■ ADVERTISE, BID & AWARD
 ■ CONSTRUCTION
 ■ FUNCTIONAL TESTING / START-UP

SOUTHERN CALIFORNIA REGIONAL RAIL
 ELECTRIFICATION PROGRAM
 DESIGN & CONSTRUCTION SCHEDULE
 Commuter & Freight

Project Start : 1JAN91
 Project Finish: 31DEC10*
 Data Date: 10CT91
 Plot Date: 11FEB92

Parsons DeLeuw, Inc.			
Date	Revision	Checked	Approved



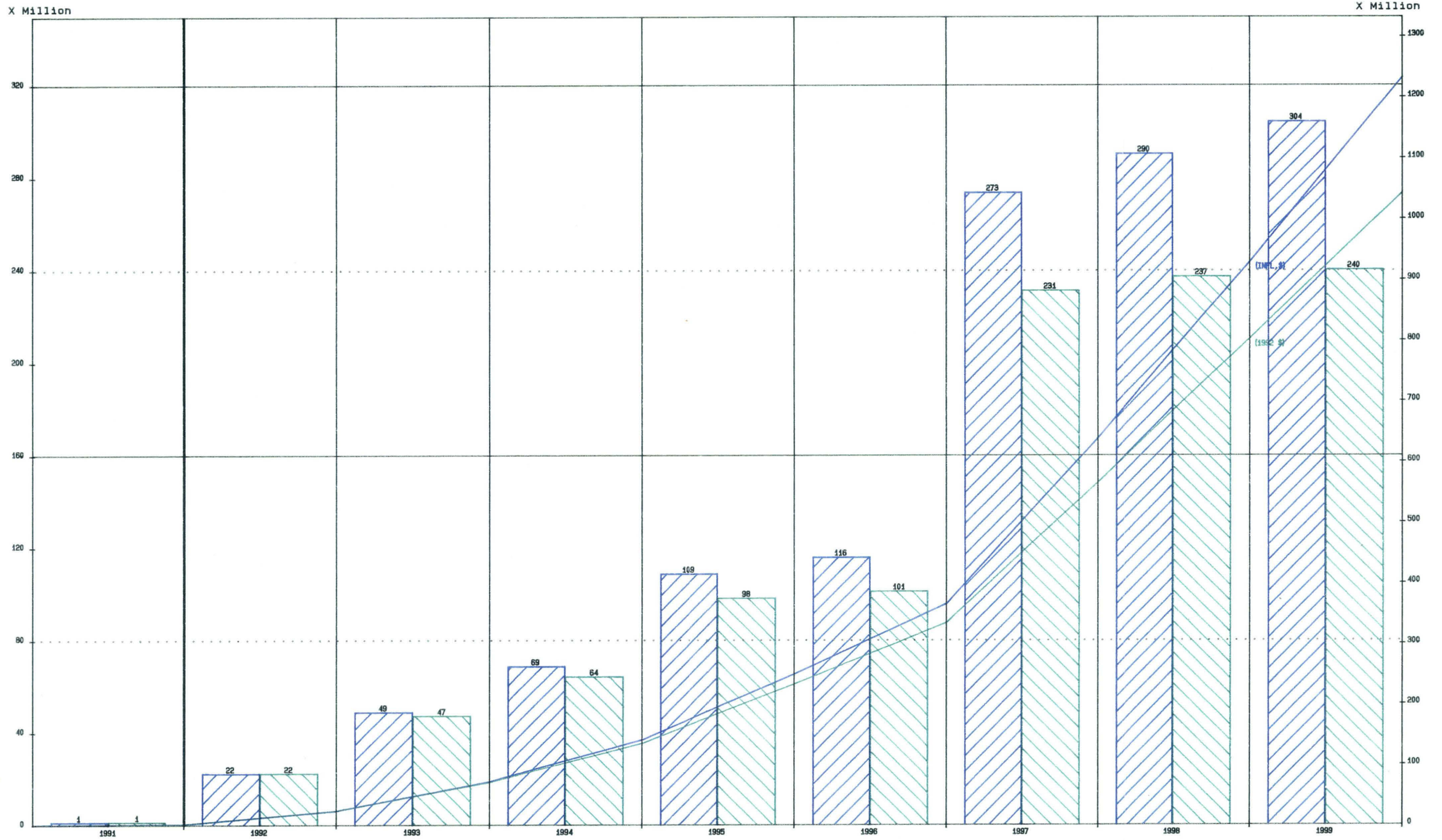
[White Bar] Activity Bar/Early Dates
 [Red Bar] Critical Activity
 [Blue Bar] Progress Bar
WBS LEVEL 5
 [Black Bar] CONCEPTUAL DESIGN
 [Yellow Bar] PRELIMINARY ENGINEERING / ENVIRONMENTAL
 [Blue Bar] FINAL DESIGN
 [Dotted Bar] ADVERTISE, BID & AWARD
 [Green Bar] CONSTRUCTION
 [Hatched Bar] FUNCTIONAL TESTING / START-UP
 Primavera Systems, Inc. 1984-1991
 ELE1 - SCH211



SOUTHERN CALIFORNIA REGIONAL RAIL
ELECTRIFICATION PROGRAM
DESIGN & CONSTRUCTION SCHEDULE
Commuter & Freight

Sheet 2 of 2

Project Start : 1JAN91
 Project Finish: 31DEC10*
 Data Date: 10CT91
 Plot Date: 11FEB92

Parsons DeLeuw, Inc.			
Date	Revision	Checked	Approved



 Inflated using 3.46% annual rate.
 Constant 1992 dollars.

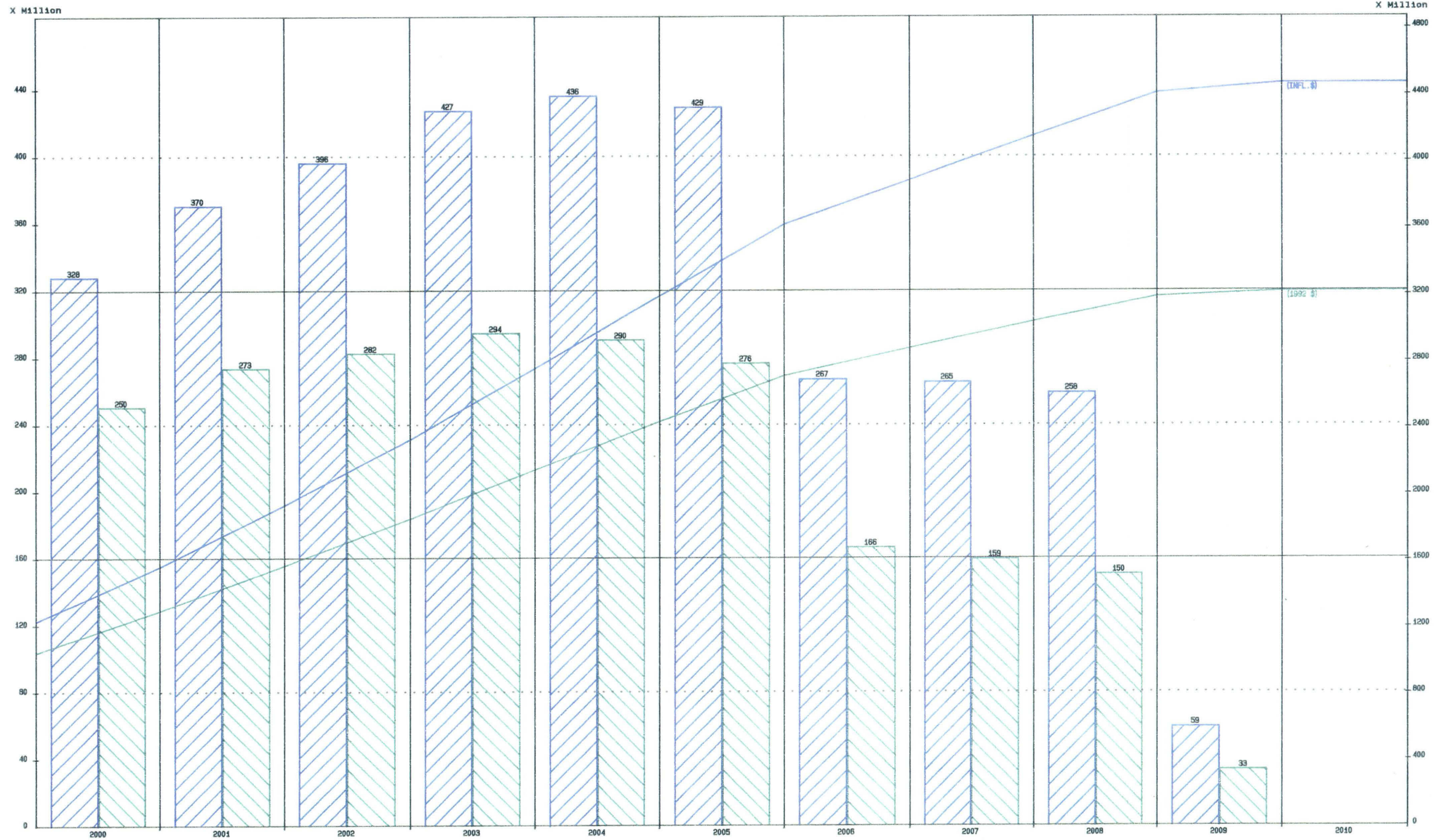
Primavera Systems, Inc. 1984-1991
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Project Start : 1JAN91
 Project Finish: 31DEC10

SOUTHERN CALIFORNIA REGIONAL RAIL
 ELECTRIFICATION PROGRAM
 COMMUTER & FREIGHT

Sheet 1 of 1
 Data Date: 10CT91
 Plot Date: 11FEB92

Parsons DeLeuw, Inc.			
Date	Revision	Checked	Approved



 Inflated using 3.46% annual rate.
 Constant 1992 dollars.
 Primavera Systems, Inc. 1984-1991 CFRCONY

Project Start : 1JAN91
 Project Finish: 31DEC10

SOUTHERN CALIFORNIA REGIONAL RAIL
 ELECTRIFICATION PROGRAM
 COMMUTER & FREIGHT

Sheet 1 of 1
 Data Date: 10CT91
 Plot Date: 11FEB92

Parsons DeLeuw, Inc.			
Date	Revision	Checked	Approved



February 14, 1992

CONTACT: PETER HIDALGO
METROLINK MEDIA RELATIONS
(213)244-6142

FOR IMMEDIATE RELEASE

RAIL ELECTRIFICATION TASK FORCE RELEASES FINDINGS

Findings of the Rail Electrification Task Force--created to develop costs and schedules for possible electrification of 806 miles of freight and commuter railroads in Southern California-- were presented today to the five-county Southern California Regional Rail Authority (SCRRA), the agency responsible for the construction and operation of Metrolink, the regional commuter rail system.

The draft report includes costs and schedules to electrify nine Metrolink and four freight rail lines, analysis of Nitrogen Oxide (NOx) emissions, ranking of lines recommended for electrification, funding scenarios and an action plan for electrifying the first route.

Findings show that electrification of the 13 candidate lines, which total 806 miles of Metrolink and freight rail routes will cost approximately \$3.26 billion or \$4 million per mile in current dollars. To electrify the nine Metrolink lines would cost \$1.45 billion in current dollars.

Without funding constraints, completion of electrification of freight and Metrolink lines could occur within a decade. An assumed \$300 million annual funding cap in 1992 dollars will lengthen the project duration to 18 years.

(MORE)

RAIL ELECTRIFICATION TASK FORCE RELEASES FINDINGS

February 14, 1992

Page 2

The Task Force used the following criteria to determine route priorities: NOx emissions reduction, air quality cost-effectiveness, operational cost-effectiveness, environmental issues, legal issues, funding viability, service quality impacts, shared use potential and implementation schedule duration.

Based on that criteria, the task force found that the following priority for route electrification would yield the greatest air quality benefits for Southern California:

1. Route 1, UP/SP Consolidated Corridor
2. Route 13, UP Ports to Yermo
3. Route 6, Riverside via Ontario (Metrolink)
4. Route 12, ATSF Ports to Barstow
5. Route 7, Riverside-LA via Fullerton (Metrolink)
6. Route 11, SP Ports to Yuma
7. Route 9, San Bernardino to Irvine (Metrolink)
8. Route 2, San Bernardino to Los Angeles (Metrolink)
9. Route 3, Moorpark (Metrolink)
10. Route 4, Santa Clarita (Metrolink)
11. Route 5, LOSSAN Corridor Intercity and (Metrolink)
12. Route 8, Hemet to Riverside (Metrolink)
13. Route 10, Redlands (Metrolink)

The Task Force recommended the highest scoring Metrolink line --Route 6, Riverside to Los Angeles via the Union Pacific-- as the first line to advance to preliminary engineering for potential electrification and also for testing of alternative fuels.

Electrification of this route, which spans 59 miles, would cost approximately \$253 million, or \$4.2 million per mile in current dollars and will take about five years to complete.

(MORE)

RAIL ELECTRIFICATION TASK FORCE RELEASES FINDINGS

February 14, 1992

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Implementation of the proposed electrification schedule depends in large part on funding availability. A decisive financial commitment from the Union Pacific, Santa Fe and Southern Pacific railroad companies, the Southern California Edison and the federal, state and local governments is necessary to successfully accomplish rail electrification in Southern California.

To obtain a firm commitment from the participating agencies and the private sector, the following steps and refined data are necessary:

- Complete preliminary engineering, which is now five percent complete, to the 30 percent level. That level of engineering is the minimum required by the California Public Utilities Commission (CPUC) to consider a utility rate application proposed by Southern California Edison.
- Complete environmental studies.
- Negotiate agreements with the railroads and the utility companies. The railroads have to be a willing participant both conceptually and financially.
- Identify additional federal, state, local and other potential funding sources.
- Conduct testing of alternative fuels -- methanol, clean diesel, compressed natural gas and liquified natural gas.

Given the extended period of time and high costs involved in electrification of the Metrolink and freight rail corridors, the Task Force strongly recommended that the Southern California Association of Governments (SCAG) and the South Coast Air Quality Management District (SCAQMD) re-evaluate Measure 14 (Freight Rail Electrification) of the Air Quality Management Plan (AQMP) with respect to: (1) The timing and percentage of NO_x emission reduction, and (2) proposed technology to achieve required emission reductions.

(MORE)

RAIL ELECTRIFICATION TASK FORCE RELEASES FINDINGS

February 14, 1992

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First, the results of the study strongly suggest that the planned 90 percent reduction in rail-related NOx emissions is not achievable through Metrolink electrification by 2010. In fact, the study shows that electrification of the nine Metrolink rail lines only offers just a 5 percent reduction of NOx emissions by the year 2010.

Moreover, the study shows that electrifying Metrolink only is not a cost-effective strategy to reduce emissions. Electrification of any single Metrolink line would exceed \$30,000 per ton of NOx reduced. The SCAQMD does not consider a project exceeding that level to be cost effective. Therefore, electrification makes sense only if freight service is also included.

Second, further analysis of the viability of alternative strategies for emission reduction should be pursued. Testing of more cost-effective alternate fuels is strongly recommended to be applied to the routes which are not candidates for early electrification or not viable for electrification.

The following three demonstration projects should be pursued based on findings of the alternative fuels section of the report:

- Test electronic controls on diesel locomotives manufactured by General Motors which could further reduce emissions of the already cleaner diesel engines by an additional 25 percent. The SCRRA will match a grant from the SCAQMD to conduct the study.
- Test the conversion of a diesel powered locomotive to methanol power. The SCRRA has proposed to match a SCAQMD grant to fund the study which will be conducted by Detroit Diesel and General Motors.
- Test the application of compressed natural gas and liquified natural gas on passenger and freight locomotives. A demonstration program is under development.

(MORE)

RAIL ELECTRIFICATION TASK FORCE RELEASES FINDINGS

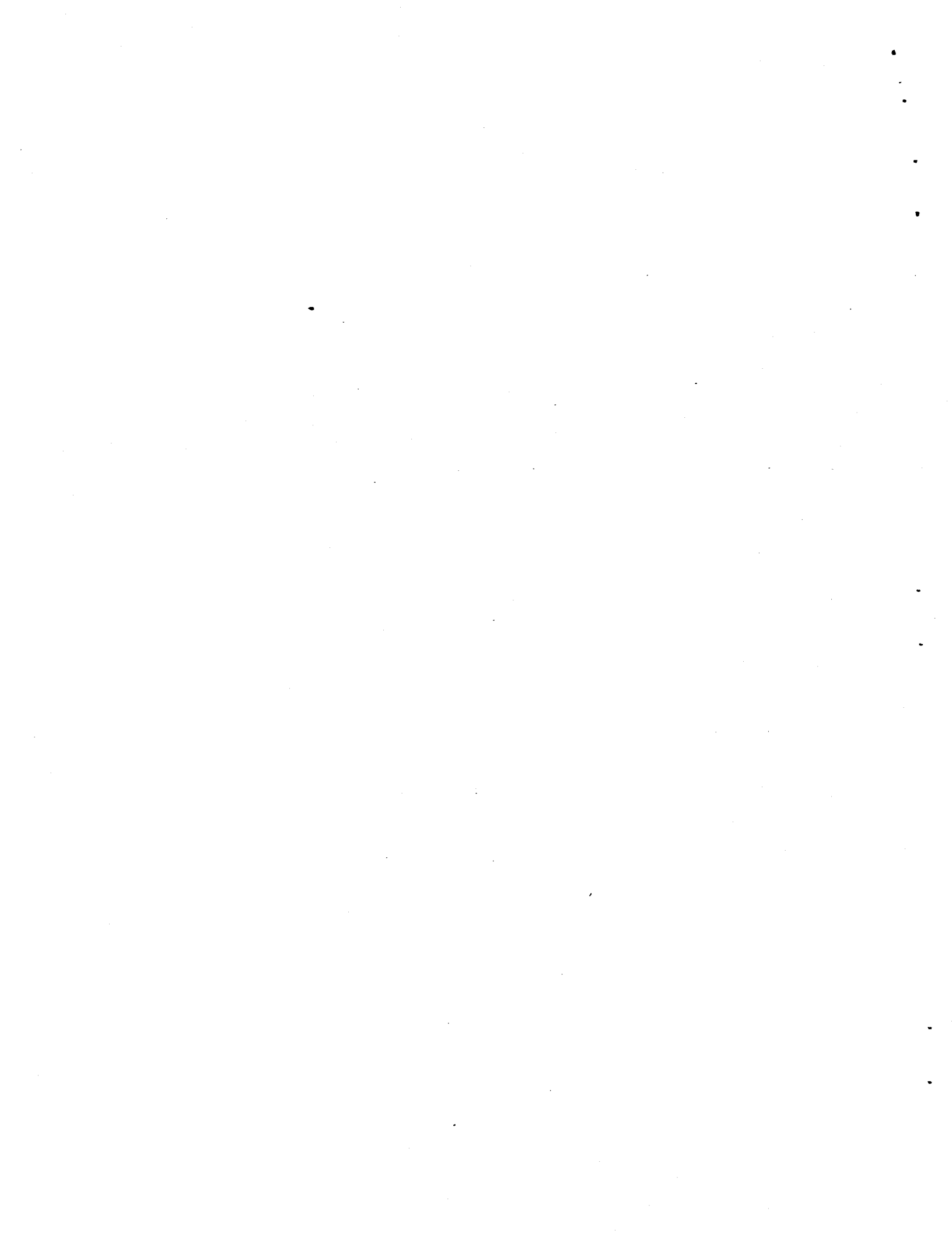
February 14, 1992

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The Rail Electrification Task Force was created in September 1991 by the Southern California Regional Rail Authority (SCRRA) and the Los Angeles County Transportation Commission (LACTC). The purpose of the rail electrification study was to respond to environmental concerns raised by the California Transportation Commission (CTC) regarding plans for implementation of 400 miles of the fuel-efficient, diesel-powered Metrolink system and the need to comply with Measure 14 of the 1991 Air Quality Management Plan which targets a 90 percent reduction in rail-related NOx emissions by the year 2010. The California Transportation Commission (CTC) will officially receive the study February 18 in Oakland, CA.

Next steps for the SCRRA to implement a NOx reductions plan include the resolution of policy issues regarding electrification funding, adoption of a phasing plan for electrification and concurrent initiation of an alternate fuel demonstration project.

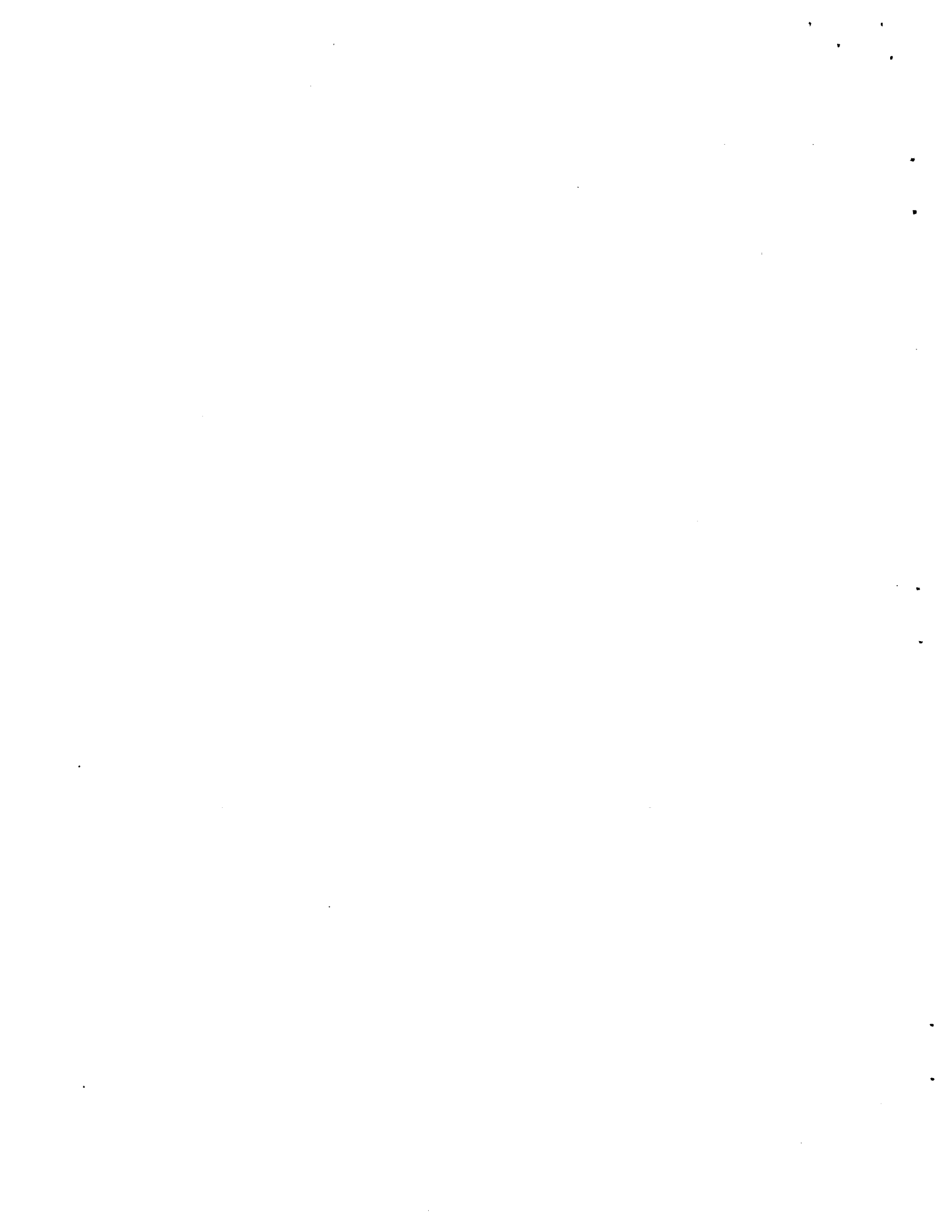
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RECOMMENDATIONS AND NEXT STEPS



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RECOMMENDATIONS AND NEXT STEPS

- Address ~~of~~ policy issues
- Adopt contingent phasing plan for electrification and alternate technologies
- Proceed with parallel initial projects of electrification and alternate technologies
- Perform Project Engineering
- Obtain environmental clearances
- Obtain railroad/utility agreements
- Develop full funding plan
- Obtain regulatory approvals



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RESOLUTION OF POLICY ISSUES

- **Ascertain shared commitment from SCRRA and member counties, the utilities, the railroads, CTC, USDOT, AQMD, and SCAG to proceed with electrification and alternate technologies**
- **Implement Metrolink System with diesel initially**
- **Re-evaluate AQMP Measure 14 re:**
 - **NOx emission reduction target**
 - **Proposed technology to**
 - **Phasing**
- **Revise AQMD Resolution of 10/91**
- **Initiate demonstrations of alternate technologies**
- **Identify funding sources for next steps**
- **Address concerns about cost and cost-effectiveness**
- **Define roles and responsibilities re: Funding, Design, Construction, O&M, and Ownership**
- **Negotiate which elements would be eligible for rate treatment**



OBJECTIVES OF THE INITIAL PROJECT

- **Accelerate electrification process through initiation of preliminary Engineering and Environmental Studies**
- **In parallel, test Alternate Technologies for viability and cost-effectiveness**
 - **Clean Diesel**
 - **Methanol**
 - **CNG/LNG**
- **Resolve Issues Concerning:**
 - **Cost and cost-effectiveness**
 - **Viability of rate treatment**
 - **Railroad participation**
 - **Funding commitments**



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RECOMMENDATION FOR SCRRA ACTION

- **Re-affirm dual commitment to mobility and air quality objectives**
- **Continue with Expeditious Implementation of the Metrolink Regional Commuter Rail System under reduced emission diesel operation initially. System design will accomodate future electrification**
- **Commit to achievement of air quality goals**
- **Adopt Phased Electrification Program contingent on:**
 - **Utility rate treatment**
 - **State and Federal funding commitments**
 - **Railroad participation**
 - **Local funding commitments**
 - **Resolution of concerns about cost and cost-effectiveness**
- **Incorporate Alternate Technologies in Electrification Program**
- **Select Initial Corridor**



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INVESTOR- AND MUNICIPALLY-OWNED UTILITIES

- **In conjunction with SCRRRA and the Railroads, select an initial Project for Preliminary Engineering**
- **Initiate negotiations with SCRRRA and the railroads to determine elements eligible for rate treatment**
- **Negotiate with SCRRRA and the Railroads to defining roles and responsibilities during Design, Construction, Testing, and Operation**
- **Negotiate agreements between the Railroads, Utilities, and others regarding rights and responsibilities for Property, Installation, O&M of Traction Power System, and Sales of Electric Service**
- **Prepare and submit applications for rate-treatment**
- **Secure ruling from appropriate regulatory bodies**



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THE RAILROADS (SANTA FE RAILWAY CO., SOUTHERN PACIFIC TRANSPORTATION CO., AND UNION PACIFIC RAILROAD)

- **Select an Project for Preliminary Engineering**
- **Assist in determining elements eligible for Rate-treatment**
- **Negotiate with SCRRRA with respect to:**
 - **Definition of the Consolidated Corridor**
 - **Access rights**
 - **Construction phasing**
 - **Financial participation**
 - **Phasing of freight electrification**
- **Initiate discussions with SCRRRA and the Utilities to define roles and responsibilities during Design, Construction, Testing, and Operation**
- **Negotiate with Utilities and SCRRRA with respect to O&M requirements including:**
 - **Roles and responsibilities for maintenance**
 - **Funding responsibilities**
 - **Division of power costs**
 - **Basis for allocating O&M costs**



CALIFORNIA TRANSPORTATION COMMISSION

- **Provide preliminary funding commitment**
- **Provide preliminary conceptual approval**
 - **Phased Electrification Program**
 - **Initial project**



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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT IN CONJUNCTION WITH CALIFORNIA AIR RESOURCES BOARD

- **Revise resolution to permit expeditious implementation of Metrolink with diesel operations initially**
- **AQMD, CARB, SCAG, SCRRA and its member agencies should re-evaluate Measure 14 of the AQMP with respect to:**
 - **NOx emission reduction target**
 - **Proposed technology**



SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

- **Based on the results of this report, SCAG in conjunction with AQMD, CARB, SCRRA and its member agencies, and the freight railroads should re-evaluate Measure 14 of the AQMP with respect to:**
 - **NOx emission reduction target**
 - **Proposed technology**
 - **Phasing of required emission reductions**



CONCLUSION

- **Achieving the objectives of the AQMP through Electrification and Alternate Technologies will require a shared commitment and coordinated action by:**
 - **SCRRRA and Member Counties**
 - **Utilities**
 - **Railroads**
 - **CTC**
 - **USDOT**
 - **AQMD**
 - **CARB**
 - **SCAG**





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ALTERNATES

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RESOLUTION #92-311-1

RESOLUTION OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS DIRECTING STAFF TO CONDUCT/PARTICIPATE IN A FURTHER STUDY TO REVISE TRANSPORTATION CONTROL MEASURE 14 (RAILROAD ELECTRIFICATION) BY JUNE 1993

WHEREAS, the Southern California Association of Governments (SCAG) serves as the Metropolitan Planning Organization for Southern California and has been duly designated by Federal and California Statutes as the body responsible for regional transportation planning within its jurisdiction; and

WHEREAS, under the state law, SCAG has the responsibility for preparing and approving that portion of the Air Quality Management Plan (AQMP) relating to transportation programs, measures and strategies; and

WHEREAS, SCAG is mandated to analyze and provide emission data related to its planning responsibilities; and

WHEREAS, as the federally designated MPO for the region, SCAG is responsible for determining conformity of the Regional Mobility Plan (RMP), the Transportation Improved Program (TIP), and other transportation plans and programs to the Air Quality Management Plan (AQMP); and

WHEREAS, the conformity is the process by which SCAG ensures the implementation of the Transportation Control Measures (TCM) of the AQMP is on schedule; and

WHEREAS, the 1989 Air Quality Management Plan (AQMP) included Railroad Electrification as Transportation Control Measure (TCM) 14 and Railroad Consolidation as TCM 11; and

WHEREAS, TCM 14 and TCM 11 require electrification of 90% of the rail operations in the basin and consolidation of freight train corridor from the ports of Los Angeles and Long Beach to downtown Los Angeles; and

WHEREAS, SCAG reaffirms its commitment to milestones and emission reductions called for in Measure 14 of the 1989 & 90 AQMP.

NOW THEREFORE BE IT RESOLVED THAT the Executive Committee of SCAG directs staff:

- o To create a TCM Subcommittee for Measure 14 (Railroad Electrification) and Measure 11 (Railroad Consolidation). And work with the Regional Rail Authority staff, South Coast Air Quality Management District staff and other interested parties to establish the membership of the subcommittee, and to determine the staffing for the committee.
- o To obtain the funding for and to conduct/participate in the next phase of the study for these measures. This study should determine the most cost-effective projects and programs which will achieve the emission reductions set forth in the 1989 & 90 AQMP.
- o To assess the funding needs for these projects and programs, and to participate in efforts with potential funding partners including California Transportation Commission (CTC), Federal Railroad Administration (FRA), SCRRA, the private railroads, the utilities and Caltrans to carry out these tasks. Finally, SCAG should work with the AQMP, ARB and EPA to develop an enforceable implementation plan for these TCM's.
- o Have the above accomplished by June, 1993.

Approved by the Executive Committee of the Southern California Association of Governments at the 1992 General Assembly on this 20th day of February, 1992.

JOHN K. FLYNN, President SCAG
Supervisor, Ventura County

Attest:

MARK A. PISANO, Executive Director

000075

MEMORANDUM

DATE: FEBRUARY 19, 1992

TO: EXECUTIVE COMMITTEE

FROM: JIM GOSNELL, DIRECTOR OF TRANSPORTATION PLANNING

SUBJECT: RAILROAD AND COMMUTER RAIL ELECTRIFICATION

In order to conduct the accelerated Railroad Electrification Study, a Steering Committee was formed to direct the study efforts. Membership of the Steering Committee consists of interested public agencies, utilities, railroads, and environmental groups. Five Technical Committees were established to review and analyze the consultants' work and to discuss Financial, Legal & Regulatory, Planning & Operations, Environmental, and Alternative Fuels issues.

SCAG staff have been participating in the Steering Committee and on the Technical Committees. Consultants for the Southern California Regional Rail Authority and participating agency staff have completed the Draft Accelerated Railroad Electrification Study. The accomplishment of this amount of work in such a short time frame is a credit to all of those involved. The report was presented to the SCRRA on Feb. 14, 1992. Comments on the draft report will be received until March 6, 1992.

The Executive Summary of this report is attached for your review and comments.

000062



Electrification of Rails Could Cost \$4.6 Billion

■ **Transit:** A task force study on commuter and freight service is in response to a proposal for a smog-producing, diesel-powered system.

By JEFFREY A. PERLMAN
TIMES STAFF WRITER

Electrifying 806 miles of Southern California's current and planned commuter and freight rail service to reduce harmful diesel emissions will cost \$4.6 billion, may boost consumers' monthly electric bills and could take 18 years, according to a new study.

The report by a Southern California Regional Rail Authority task force was prepared to respond to reports last year that a new diesel-powered commuter-rail service, Metrolink, may create a larger amount of one key smog component than it will save by getting commuters out of their cars.

Metrolink is scheduled to start service on its first three lines—from San Bernardino, the Santa Clarita Valley and Ventura County into Los Angeles—in October. Metrolink also plans to expand service into Riverside, Orange and northern San Diego counties.

To speed relief for traffic congestion, the report recommends starting service with diesel engines

while pursuing the difficult task of electrifying the region's rail lines. The report also urged, as an alternative to electrification, exploring the feasibility of clean-burning methanol or natural gas in modified diesel locomotives.

Freight railroads must also be brought into the process, the report said, because they are responsible for the bulk of railroad-related air pollution and should bear most of the cost of installing electric wires over Southern California rail lines.

Of the \$4.6-billion cost of electrification, \$2.75 billion should come from freight haulers, the report said. Electrification would not be cost-effective without participation by the freight companies, the report concluded.

The remaining \$1.85 billion, the commuter railroad's share, could be paid in any number of ways, the report said, including a surcharge on electric bills.

That idea was dismissed as "ridiculous" by Dana W. Reed.

"The thought of billing the utility ratepayer \$4 billion to fix . . . little more than 5% of the total [air pollution] problem is totally unacceptable," said Reed, the Orange County Transportation Authority representative on the Southern California Regional Rail Authority board.

He said that the freight railroads alone should pay for electrification as a cost of doing business and that the debate over electrification should not delay new commuter rail service because rail provides a much-needed alternative to congested freeways.

In a draft summary of its \$500,000 report that was released Wednesday, the task force, led by former California Transportation Commission member Bruce Nesbitt, did not estimate how much utility users' bills might increase to fund a systemwide conversion from diesel power.

Regional planners and air-quality officials have adopted a goal of 90% electrification of rail by 2010 to meet requirements of the federal Clean Air Act.

★ WEDNESDAY, FEBRUARY 26, 1992

B5

Electrifying Rail Lines

■ I would like to correct the implication of a recent report that suggests Southern California Edison's customers would pay for the costs of electrifying rail ("Electrification Could Cost \$4.6 Billion," Feb. 13). We have never seen 100% financing of the system by our customers as an option, and have repeatedly said so.

The Southern California Accelerated Rail Electrification report proposes an innovative public-private partnership for financing rail electrification that could include public sector funding at the federal, state and local levels, municipal and investor-owned utilities and railroad companies.

Edison offered to consider participating in the building and operating of those portions of the system that fall within a more traditional utility role—supplying electricity to the trains. This involvement would occur, however, only to the extent that it would be in the best interest of our customers.

We do believe that the electrification of rail systems could go a long way toward improving the air we breathe. Unlike many other businesses in the region that have chosen to relocate to other states (and even other countries), Edison is a long-term corporate citizen of the South Coast Basin. Consequently, we support the phased-in rail electrification plan, with

engineering and construction for one line commencing immediately.

We believe this would be an effective way to prove out the actual cost, air quality benefits, consumer acceptance and viable funding sources. We hope such a plan will be pursued by those in position to do so.

MICHAEL R. PEEVEY
President
Southern California Edison
Rosemead

■ The Southern California Regional Rail Authority Task Force has stated that the electrification of the 806 miles of Southern California commuter and freight rail service will cost \$4.6 billion and take 18 years to complete.

This works out to a cost of \$5 million per mile and a construction speed of 4 miles per month.

I should like to point out the following: In 1978 South Africa electrified 542 miles of track, a rate of 45 miles per month. In 1977 Russia electrified 497 miles of track. There are numerous other examples. With regard to cost, in 1977 the French instituted a 10-year program to electrify 780 miles of track at a cost of (U.S.) \$800 million, about one-fifth of the rail authority estimate. Similarly, Italy, between 1975 and 1979, spent only \$75 million to electrify 365 miles of track, a rate of about \$2 million per mile.

Naturally, these figures have to be adjusted for inflation but, come on guys, I don't get it.

LAUREN ZUCKERMAN
Sherman Oaks

T H E O R A N G E C O U N T Y
Register

FEBRUARY 13, 1992

Electric rail would cost \$3.2 billion, report says

By Cheryl Downey
The Orange County Register

Switching Southern California commuter and freight trains from diesel locomotives to cleaner electric power would take up to 10 years, cost \$3.2 billion and reduce emissions by a relatively small amount, a draft report on electric rail contends.

The report — produced at a cost of \$1 million — recommends that Metrolink commuter rail be allowed to start new train service using diesel engines despite air-

■ **CONSULTANT:** Nestande has a reputation of being anti-rail/24

quality concerns. But rail planners should consider converting one route to electric rail early on and others later, it says.

"Some will say everybody knew clean air would cost more," said Orange County Supervisor Harriett Wieder, who serves on the South Coast Air Quality Management District board. "I think this gives cause to put the brakes on."

Please see RAIL/24

Rail electrification

A draft study examining what it would take to transform Southern California's diesel-powered commuter rail and freight train operations to electric power estimates that it would cost approximately \$4 million per mile and take up to 10 years to accomplish. The total price tag for all commuter and freight lines is estimated at \$3.2 billion. Shown below is the total electrification cost for each individual line. Because the lines share track, it would cost less than the total of the figures below to electrify all lines.

Route	Route miles	Cost to electrify commuter	Cost to electrify commuter & freight
Los Angeles-San Diego	134	\$502.4 million	\$562.8 million
San Bernardino-Irvine	53	\$214.8 million	\$257.8 million
Riverside via Ontario	59	\$220.5 million	\$253.3 million
Riverside via Fullerton	62	\$256.3 million	\$289.1 million
Hemet-Riverside	39	\$110.1 million	\$110.1 million
Redlands commuter	12	\$39.1 million	no freight
Baldwin Park commuter	57	\$189.5 million	no freight
Moorpark commuter	48	\$186.2 million	no freight
Santa Clarita commuter	35	\$137.9 million	no freight
Union Pacific/Southern Pacific	394	no commuter	\$1.513 billion
Southern Pacific ports to Yuma	282	no commuter	\$1.040 billion
Santa Fe Railway ports to Barstow	176	no commuter	\$748.8 million
Union Pacific ports to Yermo	187	no commuter	\$801.3 million

Source: Draft executive summary, Southern California Accelerated Rail Electrification Program, prepared for Southern California Regional Rail Authority

RAIL: Electrification won't cut emissions much

FROM 1

Bruce Nestande, a former Orange County supervisor who headed the Regional Rail Electrification Task Force that produced the report, said Wednesday that the five-month study does not make a good argument for a region-wide switch to electric trains.

"It doesn't make sense when you have alternatives," Nestande said.

Alternatives include developing clean-fuel locomotives which would produce fewer emissions, and making diesel engines less polluting, he said. Another strategy would be to consolidate area freight trains onto a single electric rail line to save money, Nestande said.

Although regional air-quality plans call for eventual electric rail systems, the South Coast Air Quality Management District pushed last year for early electric rail at the expense of quick-start commuter rail. The district is under the gun to reduce the nitrous-oxide emissions that diesel engines produce.

That has delayed Orange County's plans to add eight round-trip trains a day between San Juan Capistrano and Los Angeles in 1993 because state officials stopped orders for diesel engines until it is determined whether Southern California rails will be converted to

“

Santa Fe, Southern Pacific and Union Pacific — it's their problem.”

Dana Reed

Orange County Transportation Authority director

electric.

But the report shows that Orange County's commuter line — on Los Angeles to San Diego track — would not be a good candidate for electrification because it would cost \$100,000 per ton of nitrous oxide emissions reduced.

It also shows that only a small percentage of nitrous oxide emissions in the region come from trains — 2.5 percent. And by the year 2010, commuter rail will contribute only a small portion of total railroad nitrous oxide emissions — 5.4 percent. Other emissions are reduced because mass transit keeps cars off the road.

Rail planners working Wednesday to revise the draft report, due Friday, said some recommendations and conclusions might change before the report is presented to the Southern California Regional Rail Authority in a meeting in Simi Valley.

Among the preliminary report's most controversial aspects is its identification of local, state and

federal agencies and Southern California Edison customers as the most likely funding sources. Edison customers could be asked to pay higher rates to fund electric rail.

Although freight railroad companies — responsible for 92 percent of the diesel train emissions — probably would be asked to contribute financially, the report says they are reluctant to invest in electric systems if it earns them no profits.

“Santa Fe, Southern Pacific and Union Pacific — it's their problem,” said an angry Dana Reed, an Orange County Transportation Authority director who serves on the regional rail authority. “Give me one good reason the public should pay to fix a problem caused by the freight railroads.”

Mike Martin, a spokesman for Santa Fe Railway, said Wednesday that costly air-quality requirements could ultimately force freight railways right out of Southern California.

WE ATTED

Electric trains feasible

Study finds converting
railroads possibility

By JEFF SEGOL
News Chronicle

SIMI VALLEY — Converting major Southern California train lines to electricity to cut their pollution is feasible, a study released Friday concludes.

The study, prepared by a task force of experts, was presented to the Southern California Regional Rail Authority, a five-county agency which will operate the Metrolink commuter rail service, including a Moorpark-to-Los Angeles line scheduled to begin service in October.

At this point it doesn't appear that immediate electrification of that line will be required.

The panel took no action on the study's recommendations, which will be formally considered sometime in late March.

But several members indicated their main worry was how much of the electrification cost commuter rail systems would have to pay, when freight lines generate most of the pollution.

"It says \$1.6 billion (to electrify) commuter, then it says \$3.4 billion for freight," Simi Valley City Councilman Bill Davis, Ventura County's representative on the authority, said after the meeting. "They're basically saying 40 percent is put down for commuter. How did they come up with a 40 percent cost factor

See RAIL, Page B-4

Rail

From Page B-1

for us when we only cause 5 percent of the problem.”

The study said 1,452 miles of track would be electrified, at an overall cost of \$4.5 billion overall through 2009, when the project would be completed.

The study was initiated last September in response to objections, raised by Southern California Edison and echoed by the California Transportation Commission, that diesel locomotive pollution would largely cancel out improvements to air quality by getting commuters out of their cars and into trains.

The study confirms that fact, said Mike Nazemi, planning manager for the South Coast Air Quality Management District.

Nazemi said a rule included in the district's 1991 Air Quality

Management Plan requires nitrogen oxide emissions from locomotives be cut 90 percent by 2010. Diesel commuter rail would add two tons per day, but electrifying all rail lines would cut emissions by 27 tons, about 76 percent, he said.

He said the study shows electrification is financially feasible, costing a maximum of about \$10,000 per ton of pollutants eliminated, if all freight and commuter lines were converted.

That is far below the per ton cost the district has imposed on some Southern California stationary sources, such as factories and refineries, he said.

Nazemi acknowledged that converting commuter lines alone would not be financially feasible.

Commuter conversion would involve 671 track miles and cost \$1.7 billion through 2004, or \$1.4 billion in 1992 dollars.

So far the air district has decided that Southern California's first three commuter lines, including the Moorpark line, could be started with diesel trains and converted later.

Despite the air district's tentative decision, “I think we're all worried,” Davis said.

The task force study suggests the first electrification project should be a Riverside-to-Los Angeles freight line.

Bruce Nestande, a former Orange County supervisor who chaired the task force, said the report doesn't end the dispute.

“I think we have good numbers by now, but the numbers are going to be challenged, trust me,” he said. “We're already getting a letter from Southern California Edison saying the (cost) numbers are too high, we've gotten letters from the railroads saying the numbers are too low.”

Reduced emissions on track

Rail agency orders 'clean' locomotives

By Cheryl Downey
The Orange County Register

SIMI VALLEY — Spurred by air-quality concerns, regional commuter-rail officials initiated development of the nation's first alternative-fuel locomotives Friday.

The Southern California Regional Rail Authority ordered a diesel locomotive that will reduce emissions by 70 percent over the typical diesel locomotive. The authority will modify another locomotive to use clean-burning methanol fuel.

The most powerful argument for speeding development of clean-fuel locomotives came from a report issued this week that put a \$3.7 billion price tag on converting Southern California's diesel-operated commuter and freight trains to electric power.

Air-quality officials are pushing for electrification of the region's rails to help reduce nitrogen-oxide pollution.

The report, by the Regional Rail Electrification Task Force, said it could take more than 10 years and probably require an electricity rate increase to electrify the tracks.

Pioneered by Orange County's commuter train, commuter rail is on the verge of a major expansion in Southern California. Lines are planned for Los Angeles County and the four counties around it, with some starting service as early as next year.

The locomotives ordered Friday will be used to test alternative fuels, said Richard Stanger, the authority's executive director. If the tests are successful, the authority will fit its other locomotives to use cleaner fuels, he said.

Alterations to the \$2 million engines will cost \$500,000 to \$660,000 each. Stanger said the authority, the South Coast Air Quality Management District, General Motors Corp. and Detroit Diesel will pay for the innovations. General Motors and Detroit Diesel will produce and modify the locomotives.

"Within three or four years, I expect our locomotives to be 70 percent cleaner than they are now," Stanger said.

Alternative fuels alone cannot eliminate pollution from trains, officials said, but they can play a part.

South Coast Air Quality Management District officials are pushing for a dramatic reduction in emissions that they say only regionwide electrification can accomplish. Rail officials say the region might be better served by consolidating all freight operations on one rail line and electrifying it.

Dana Reed, an Orange County Transportation Authority and rail authority member, argued Friday that commuter-rail planners and the public should not have to pay to clean up freight-train emissions.

"We are 5 percent of the problem and we should not be paying for 90 percent of the solution," Reed said.

But rail authority Chairwoman Jacki Bacharach, a Rancho Palos Verdes councilwoman, said an electricity rate increase will be needed to help pay for rail electrification.

"Everybody's got to pay for it," she said. "Sure, it helps the railroads, but poor air quality is hurting all of us."

State

36V Tribune

Tribune

FEBRUARY 15, 1992 A3

\$3.2 billion will electrify commuter rail

By Joseph Ascenzi
Staff Writer

LOS ANGELES — An estimated \$3.2 billion would be needed to electrify 806 miles of commuter rail, according to a report released Friday by a task force which spent six months studying the subject.

The 28-page report released by the Rail Electrification Task Force found that Metrolink — the five-county commuter rail system scheduled to begin operation this fall, could be converted to electric technology within 10 years "without funding constraints."

The report was commissioned by the California Transportation Commission in September after officials questioned using diesel fuel to power the system.

Some officials argued that Metrolink should be delayed

until the system could be electrified.

The report was presented Friday to the Southern California Regional Rail Authority, the agency responsible for building Metrolink.

"The entire question, the whole premise behind this report is environment and air quality," said Peter Hidaigo, of the LA County Transportation Commission.

"It really doesn't deal with issues or talk about timetables or funding," he said. "All it does is present facts about electrifying the commuter rail line."

Joel Schwartz, a staff scientist with the Coalition for Clean Air, praised the report.

"The cost-effectiveness per ton (of pollution reduction) is actually very low," said Schwartz, whose group wants to electrify rail lines.

San Bernardino, CA
(San Bernardino Co.)
Sun
(Cir. D. 82,573)
(Cir. S. 88,328)

FEB 15 1992

Allen's P. C. B. Est. 1888

Electric trains won't jolt smog despite shocking cost

27845#
■ The task force study recommended that alternative fuels be tested instead of paying \$2.5 million to \$4 million per mile for conversion.

By SAM ATWOOD 51
Sun Staff Writer

Converting Southern California's freight train and planned commuter lines to electric power will cost \$4 million per mile and do little to cut smog, a study released Friday said.

Instead of converting diesel trains to electric power, the report recommended that alternative

fuels — including methanol, natural gas and propane — should be tested.

The study was presented at a board meeting in Simi Valley of the Southern California Regional Rail Authority, which plans to develop nine commuter rail lines in the Southland, including one from San Bernardino to Los Angeles.

The \$720,000 study was completed by the Rail Electrification Task Force in response to the California Transportation Commission's concerns about meeting rail-related air quality goals.

The air quality district's 20-year blueprint for clean air mandates a 90 percent reduction in nitrogen oxide emissions from trains by 2010.

Nitrogen oxide emissions show up as a whiskey-brown haze on the horizon. When combined in sunlight with hydrocarbon emissions from cars and

businesses, they form ozone, one of the most harmful ingredients in smog.

The study found that electrifying the nine planned commuter lines would only reduce nitrogen oxide emissions by 5 percent by 2010.

The cost of electrifying 806 miles of freight and commuter rails would total \$3.26 billion in today's dollars, the study said. The hefty price tag could be paid for by hiking residents' electric bills.

Southern California Edison officials said the study overestimated the cost of electrification. They put the cost at about \$2.5 million per mile.

"The cost is so huge, it doesn't appear to me to be cost effective," said Jon Mikels, a San Bernardino County supervisor and board member of the South Coast Air Quality Management District.

Mikels said he believes freight and commuter

trains should be given less expensive options to reduce emissions, such as buying up and destroying smog-belching junker cars.

Rialto Mayor John Longville, a member of the rail authority, said the study should have recommended induction technology as yet another alternative.

Induction technology transmits electricity through rails beneath a train. Conventional technology transmits electricity through wires above a train. Induction technology could save money by eliminating the expensive problem of rebuilding bridges that are too low for suspended wires.

"I'm disappointed the Electrification Task Force failed to look at all possibilities," Longville said. "It's something we could be on the cutting edge of in the United States."





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RESOLUTION #92-311-1

RESOLUTION OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS DIRECTING STAFF TO CONDUCT/PARTICIPATE IN A FURTHER STUDY TO REVISE TRANSPORTATION CONTROL MEASURE 14 (RAILROAD ELECTRIFICATION) BY JUNE 1993

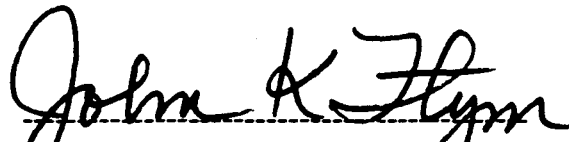
WHEREAS, as the federally designated Metropolitan Planning Organization (MPO) for the region, SCAG is responsible for determining conformity of the Regional Mobility Plan (RMP), the Transportation Improved Program (TIP), and other transportation plans and programs to the Air Quality Management Plan (AQMP).

NOW THEREFORE BE IT RESOLVED THAT the Executive Committee of SCAG directs staff:

- To create a TCM Subcommittee for Measure 14 (Railroad Electrification) and Measure 11 (Railroad Consolidation). To work with the Regional Rail Authority, the South Coast Air Quality Management District and other interested organizations that have other state and federally mandated responsibilities to establish the membership of the subcommittee.
To obtain the funding for and to conduct/participate in the next phase of the study for these measures. This study should determine the most cost-effective projects and programs which will achieve the emission reductions set forth in the 1989 & 91 AQMP.
To assess the funding needs for these projects and programs, and to participate in efforts with potential funding partners including California Transportation Commission (CTC), Federal Railroad Administration (FRA), SCRRA, the private railroads, the utilities and Caltrans to carry out these tasks. Finally, SCAG should work with the AQMD, ARB and EPA to develop an enforceable implementation plan for these TCM's.
Have the above accomplished by June, 1993.

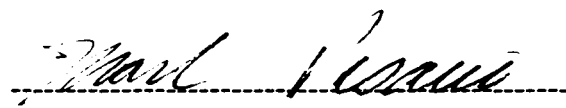
000191

Approved by the Executive Committee of the Southern California Association of Governments at the 1992 General Assembly on this 28th day of February, 1992.



JOHN K. FLYNN, President SCAG
Supervisor, Ventura County

Attest:



MARK A. PISANO, Executive Director

000192

Expensive electrification

Here's some promising news for freeway-weary commuters in the San Fernando and neighboring valleys: Trains are coming. Metrolink commuter trains may be in operation before the end of the year, linking Simi Valley, Santa Clarita, Chatsworth, Van Nuys, Glendale and other communities with Union Station in downtown Los Angeles.

Commuter rail also should help clean the air by reducing private automobile travel and easing congestion on freeways and surface streets. But some bureaucrats are complaining that the new trains won't do enough to reduce smog because they will rely on diesel locomotives. A South Coast Air Quality Management District plan calls for electrifying all the railroads in the region by 2011, a project with an estimated cost of up to \$3.2 billion.

The electrification advocates are putting the cart in front of the iron horse by calling for an enormously expensive investment before commuter trains have had a chance to prove themselves. The money that they want to spend for electrification could buy a lot of rolling stock and other improvements that might attract more people

away from their cars.

The electrification project also could be self-defeating if its costs discourage improvements that are needed to improve patronage for commuter trains.

Before rushing to judgment, air quality officials should strongly consider the possibility that their ambitious electrification proposal isn't worth the trouble and expense.

Report: Electric rail systems would cost billions

By Candysse Miller
Daily Bulletin

SAN BERNARDINO — Electrifying Southern California's rail systems to reduce smog will cost billions of dollars and imperil new commuter train routes, a new report suggests.

Commissioned by the Southern California Regional Rail Authority, the report indicates that using electric power to move the region's freight and planned commuter trains will cost upwards of \$4 million per mile — or roughly \$3.26 billion.

The proposed commuter route to be used as a trial for electrification — from Riverside to Los Angeles via Ontario — would cost \$240 million for its 60 miles of track, said Project Manager Norm Jester.

The price does not include the cost of locomotives, estimated at up to \$5 million apiece. Nearly 300 of the engines will

be needed for the 13 routes under consideration for the project, including nine commuter tracks.

These costs would likely be handed down to consumers in their utility bills, complained 4th District Supervisor Larry Walker, who chairs the SCRRA.

"That means all your constituents have higher electricity bills at their homes to pay for the electrification of rail," Walker said.

Southern California Edison officials called the report's figures conservative, and estimated that electrification would instead cost \$2.5 million per mile.

The study was treated with caution by members of the San Bernardino Associated Governments Wednesday as they reviewed the report. As its transportation commission, SANBAG administers the county's share of sales tax funds for

the commuter lines.

Critics cautioned that even Edison's estimates would mean sacrificing commuter lines to subsidize freight trains — even though the haulers make up the bulk of train-caused pollution.

"We need to keep in mind ... the tiny proportion (of pollution) that is commuter rail," said Rialto Mayor John Longville. "To what extent do we subsidize railroad freight operations?"

"It's a massive, massive subsidy."

Yet 2nd District Supervisor Jon Mikels warned that forcing railroad freight haulers to bear the brunt of electrification costs would force up their costs — and drive the market to the trucking industry, causing even more smog.

As an alternative to electricity, the study suggests demon-

stration projects converting existing diesel trains to alternative fuels — but many of these cleaner-burning products may not be available in time to meet clean air deadlines set by the South Coast Air Quality Management District.

Under SCAQMD rules, railroad emissions must be reduced by 90 percent by 2010. Through electrification alone, the 13 train routes' nitrogen oxide emissions would be reduced by 76 percent by 2010.

The regional rail agency will take up the issue next month, when it decides whether to take action on the report's conclusions.

GOVERNMENT

TRANSPORTATION

State's stance on diesel locomotives could imperil OC rail expansion

By Cheryl Downey
The Orange County Register

ANAHEIM — Southern California's ambitious commuter rail plans were nearly short-circuited Friday when the California Transportation Commission hesitated to spend rail-bond funds on diesel locomotives that pollute the air.

Commission members hammered away at one theme: They want commuter and freight trains electrified to clean up the air and they don't want to spend a lot of state money buying diesel engines that will become obsolete.

"If there is a whiff of diesel fumes in these requests, we should be notified," Commissioner Daniel Fessler said.

Although the commission ultimately approved the purchase of

12 diesel locomotives, local transportation officials expressed concern about getting commission approval next month to buy diesel locomotives for expanded Orange County commuter service planned next year.

Stan Ofelie, the Orange County Transportation Authority's chief executive officer, said he was worried about getting caught in the cross-fire.

"We've been successfully running a diesel-powered commuter train, and we're committed to clean air, too," he said. "We want to run trains. We want to use the best technology available. And we don't want to wait 10 years."

After lengthy discussion Friday, commission members approved \$134.8 million in Proposition 108 rail bonds to buy rights of way,

order locomotives, cabs and cars, build a new station, and finance other improvements for rail lines connecting Los Angeles with Ventura, San Bernardino and Riverside counties.

But they did so only after local officials pledged to reduce diesel emissions as required in regional air-quality plans.

The commission has said it would approve diesel locomotives only for the three commuter rail lines scheduled to begin service in October — those connecting Los Angeles with Ventura, Santa Clarita and San Bernardino.

Riverside service and increased Orange County commuter rail are the fourth and fifth routes, both scheduled for next year.

Rail and air-quality officials hope to persuade the commission,

which authorizes spending from two major rail bonds, that it is seriously addressing reducing emissions from dirty diesel trains through electrification of the rails and alternate locomotive fuels and power systems. But local officials are concerned about rail-electrification costs, estimated recently at

more than \$3.2 billion.

Yorba Linda Councilman Hank Wedaa, chairman of the South Coast Air Quality Management District board, is spearheading efforts to investigate cleaner fuels, including fuel cells, devices that involve a contained chemical reaction to generate heat. He told the

commission Friday that he expects the air-quality board to endorse using diesel locomotives on the first five commuter-rail routes, not just three.

Voters who approved sales-tax measures to pay for transportation improvements are asking for commuter rail, Wedaa said.

County doesn't want any electrified trains

CAMARILLO — The Ventura County Transportation Commission has voted to send a letter asking that the Moorpark-to-Los Angeles commuter train lines be eliminated from proposals to electrify train systems.

"Because it is not cost-effective under any circumstances, and because the air quality benefit is very minimal, I think it would be appropriate to send a letter that says 'Thank you, but no thank you,'" said Ginger Gherardi, the commission's executive director.

Electrification is being studied at the order of the California Transportation Commission, following lobbying by Southern California Edison officials who

argued diesel trains would harm air quality.

Gherardi said April 3 current estimates are that electrifying trains would cost \$4 million a mile, or \$3.2 billion overall for the commuter system, which comprises only 5.4 percent of all train trips.

"There's nothing in our (Ventura County's) air plan that has a requirement for rail electrification," Gherardi added. Electrification is proposed in the Los Angeles basin air plan, driving the current studies, she said.

The commission's letter will support other alternatives to diesel trains, such as methanol or clean natural gas.

Rail-pollution focus shifts from electrification to cleaner engines

By Cheryl Downey
The Orange County Register

Efforts to clean up polluting diesel locomotives moved onto a new track Tuesday when an Orange County air-quality leader proposed finding cleaner propulsion systems rather than embarking on a multi-billion-dollar electrification of regional rails.

Yorba Linda Councilman Hank Wedaa, chairman of the South Coast Air Quality Management District board, proposed a task force to explore space-age fuel-cell technology and other alternatives for cleaning up dirty diesel engines.

"We have a golden opportunity here to leapfrog technologies," Wedaa said. "Electric trains are needed to clean up the region's air, but conventional technology with overhead power lines may not be the best or most economical choice."

Dana Reed, an Orange County

Transportation Authority director and regional rail official, praised Wedaa's plan.

"That's a win-win situation for everybody," Reed said. "The commuters get their trains right away. We don't have to spend \$4 billion to electrify. And the air will be improved."

The regional air-quality plan mandates trains — one of the few remaining sources of visible air pollution — to clean up their act. Until a few months ago, rail electrification was considered the only way to eliminate 90 percent of rail-related emissions by 2010.

But rail officials commissioned a comprehensive study and found that it would cost more than \$3.2 billion to erect overhead wires on hundreds of miles of Southern California track. Wedaa's proposal — a bit of a turnaround for air-quality officials — is the first concrete sign that rail electrification is no longer favored.

"That's not the way we ought to

go in this basin," Wedaa said. "If we had to wait a few more years to get 90 percent (emissions reduction) but we can get it for 10 percent of the cost, I personally would favor waiting to save the taxpayers money."

His proposal for a technical task force to examine new locomotive propulsion systems builds on recent Southern California Regional Rail Authority initiatives to develop cleaner-running diesel engines.

But Wedaa, a retired physicist, wants the four-month task force to concentrate on fuel cells, which generate clean electricity through a chemical process.

He conceded that the technology hasn't been developed for trains but expressed confidence that it could work. Development of the technology in Southern California might even create new jobs here, he said.

The proposal was not formally approved.



GOVERNMENT

Transportation officials take on air-quality board

By Cheryl Downey
The Orange County Register

Angry that voter-endorsed commuter rail may be stalled on the tracks for several years, Orange County transportation officials Monday confronted air-quality officials whom they hold responsible.

"You're delaying important transportation programs. And those of us in the transportation field are getting very frustrated," Dana Reed, an Orange County Transportation Authority director, told members of the South Coast Air Quality Management District at a joint meeting held at the Richard Nixon Library & Birthplace in Yorba Linda.

The county agency tackling traffic congestion and the regional body charged with cleaning up the air clashed Monday over air-district rules that could hold up plans to start train service, widen roads and improve transportation.

Most recently, the air-quality board has objected to Southern California commuter-rail plans to use polluting diesel engines rather than spending time and money to develop electric rail lines.

If the board prevails, Orange County and Riverside County commuter-rail plans could be delayed. Three other commuter lines into Los Angeles would be allowed to use diesel engines temporarily.

The California Transportation Commission decided to withhold funding for diesel engines — including locomotives that Orange County planned to order for 1993 service — pending further study. A \$720,000 study of the issue is expected in late January.

Commuter rail power choice garners more criticism

By Randy Drummer
Daily Bulletin

BURBANK — State funding for the Metrolink commuter rail system is in place, but nagging questions refuse to subside about how the system will be converted from diesel trains to cleaner electric ones in future years.

State transportation commissioners, during a joint meeting with the Southern California Association of Governments, again criticized the notion of using polluting diesel locomotives to pull commuter trains.

The Southern California Regional Rail Authority, which is developing Metrolink, plans to start its first three lines this fall with diesel locomotives and incrementally convert to electric

trains over the next 18 years.

"Why not do the horse and buggy as an incremental approach?" sarcastically said Commissioner Joe Duffel, who has repeatedly criticized diesel technology as "obsolete."

The 1991 revised air quality management plan requires that 17 percent of rail lines be electrified by 2000 and 90 percent by 2010.

Some observers Thursday worried that proceeds from Prop. 116, the 1990 rail bond measure, will be exhausted long before rail officials can finish the costly process of electrifying the lines.

"The dollars are going to be well gone before the level of electrification in 2010," said Norton Younglove, outgoing chairman of the AQMD.

"If the bond issue has to carry the

entire cost of electrification, it will probably suck up all the available funds," agreed SCAG Executive Director Mark Pisano.

But Claremont City Councilwoman Judy Wright said voters who approved the rail bonds will want to see some sort of commuter rail before they step up to the voting booth to decide on additional bond issues in 1992 and 1994.

"Those people want to see something going on," she said.

Other members of the SCRRA, including Rialto Mayor John Longville and San Bernardino County Supervisor Larry Walker, argued that although studies into electrification should continue, a few diesel commuter trains are better than thousands of

smog-spewing automobiles.

The controversy over whether to use fuel-burning diesel locomotives to pull commuter trains dates back to a California Transportation Commission meeting in December 1990. Commissioners criticized the purchase of diesel locomotives at a time when air pollution officials are promoting alternative fuels and clean energy.


Commissioners balked at granting funds after a Southern California Edison assertion that noxious fumes from the locomotives would outweigh the benefit of taking cars off the road.

The outcry sparked a \$720,000 study to determine how to accelerate the electrification of freight, intercity and commuter rail lines. The study will be complete next month.

Memorandum

To: Chairman and Commissioners

File No.: M33
BOOK ITEM 2.5(b)
ACTION


From: Robert I. Remen

Date: December 3, 1991

Ref.: REQUEST FROM RIVERSIDE COUNTY TRANSPORTATION COMMISSION TO AMEND FY 1991-92 TCI PROGRAM PROJECT TO CONTRIBUTE FUNDS FOR THE SOUTHERN CALIFORNIA RAIL ELECTRIFICATION STUDY

Last month the Commission conceptually approved Riverside County Transportation Commission's (RCTC) request to amend its \$8.85 million FY 1991-92 Transit Capital Improvement (TCI) project to redirect a portion of those funds to support the Southern California Regional Rail Electrification Study effort. RCTC is involved in the Southern California Regional Rail Authority (SCRRA) effort to identify candidate rail lines, both freight and passenger, which are conducive to electrification and accelerate its implementation.

The Southern California Regional Rail Electrification Study, according to SCRRA, will cost \$720,000. The five members of the SCRRA have contributed one-third of the necessary funding and have requested funding from a number of agencies. The funding contributions to date are as follows:

<u>AGENCIES PLEDGING FUNDING</u>	<u>FUNDING</u>
Southern California Regional Rail Authority	\$240,000
South Coast Air Quality Management District	\$ 50,000
Southern California Edison	\$ 70,000
Los Angeles Water and Power	\$ 30,000
Southern California Gas Company	\$ 30,000
Southern Pacific Transportation Company	\$ 25,000
Atchison, Topeka, and Santa Fe Railroad	\$ 25,000
Union Pacific	\$ 25,000
AMTRAK	<u>\$ 25,000</u>
	<u>PLEDGED CONTRIBUTIONS TO DATE</u>
	\$520,000
<u>PLEDGES PENDING</u>	
San Diego agencies - (SANDAG, San Diego Gas and Electric, Air Quality Maintenance District)	\$ 25,000
Federal Railroad Administration	<u>\$ 25,000</u>
	<u>PENDING CONTRIBUTIONS</u>
	\$ 50,000
<u>FUNDING NEEDED</u>	\$150,000 to \$200,000
	<u>TOTAL STUDY COST</u>
	\$720,000

Chairman and Commissioners
December 3, 1991
Page 2

The South Coast Air Quality Management District is also contributing staff time worth approximately \$100,000. The SCRRA would still require \$200,000, exclusive of the in-kind staff time and pending contributions, to fully fund the electrification study which is currently underway.

Based on the information received from RCTC and the SCRRA, staff recommends:

- o That the Commission amend the adopted FY 1991-92 TCI Program (see Chart 1) to reduce the current RCTC diesel locomotive and rolling stock project from \$8,850,000 to \$8,650,000 and redirect up to \$200,000 in TP&D funds towards the \$720,000 study. If the San Diego agencies and the Federal Railroad Administration come through with their contributions, then the Commission's contribution should be reduced by a like amount and the TP&D funds be reprogrammed administratively by Commission staff to the Riverside diesel locomotive and rolling stock TCI project.
- o That if further funding is still needed, the difference necessary to fully fund the study should be sought first from other sources;
- o That the local match for the TCI funds be covered with the local and private contributions from the other contributors; and
- o That any prior Commission approvals (such as a SB 2800 approval or STIP amendment) given to RCTC for the current TCI project be reviewed and amended administratively by Commission and Department staff to conform with the new funding level.

RIR:RC:cv
34:CV17

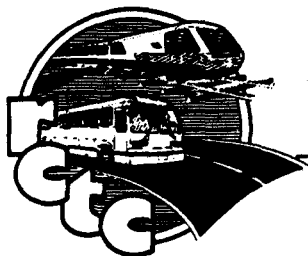
Attachment

CHART 1

TRANSIT CAPITAL IMPROVEMENT PROGRAM, AS MODIFIED DECEMBER 12, 1991
 FY 1991-92 FUNDING RECOMMENDATIONS BASED ON ARTICLE XIX FUNDING
 FOR 1988 STIP PROJECTS OR TP&D FUNDING

APPLICANT	COUNTY	PROJECT	REQUESTED FUNDS	ART. XIX FUNDING 88 STIP PROJECTS	TP&D FUNDING
<u>1988 STIP</u>					
BART	Alameda	Dublin/Pleasanton Extension	\$ 9,460,000	\$ 2,447,000	-0-
BART	San Mateo	Colma Station Extension	4,255,000	4,255,000	-0-
LACTC	Los Angeles	Metro Rail - Phase II	52,100,000	52,100,000	-0-
SD MTDB	San Diego	SR-94 Double Track Bridge	1,900,000	1,900,000	-0-
SD MTDB	San Diego	Bridge Replacement	2,000,000	2,000,000	-0-
SF PUC MUNI	San Francisco	14 Mission Trolley Overhead	379,387	379,387	-0-
CALTRANS	S.Clara/S.Mateo	PCS Platform Improvement(s)	145,000	145,000	-0-
CALTRANS	S.Clara/S.Mateo	PCS Station(s) Rehabilitation	250,000	250,000	-0-
SF PUC MUNI	San Francisco	Muni Metro Turnback	6,250,000	5,961,079	\$288,921
SF PUC MUNI	San Francisco	Metro Center Improvements	156,000	156,000	-0-
SF PUC MUNI	San Francisco	Metro Accessibility Improvmts	38,534	38,534	-0-
<u>Intercity Rail</u>					
CITY OF SAN JUAN CAP	Orange	Depot Platform	275,000	-0-	275,000
CALTRANS HQ	Merced	Amtrak San Joaquin Bag.	315,000	-0-	315,000
COUNTY OF SAN JOAQUIN	San Joaquin	Amtrak Stockton Station	578,000	-0-	578,000
OCTC	Orange	Lossan Corr. Dbl. Trak	118,000	-0-	118,000
NO SDCTDB	San Diego	Rail Siding	1,950,000	678,779	1,271,221
CITY OF BUENAVENTURA	Ventura	Amtrak Station Improvement	250,000	-0-	250,000
CITY OF HANFORD	Kings	Sante Fe Depot	225,000	-0-	225,000
CITY OF SUISUN	Solano	Suisun Rail Station Ped Mall	750,000	-0-	750,000
CITY OF SANTA ANA	Orange	Reg. Cntr. Prkg.	4,500,000	4,500,000	-0-
CITY OF FRESNO	Fresno	Fresno Railroad Station	1,800,000	-0-	1,400,000
CITY OF W SACRAMENTO	Yolo	Hrbr Blvd. RR Grade Sep.	300,000	-0-	300,000
CITY OF FRESNO	Fresno	Calwa Switch P.E. Study	204,000	-0-	204,000
<u>Discretionary Projects</u>					
BART	Contra Costa	Pittsburg/Antioch Extension	4,729,000	-0-	4,729,000
SAN BERN CTC	San Bernardino	Commuter Rail	3,750,000	-0-	3,750,000
SF PUC MUNI	San Francisco	Trolley Bus Purchase	7,722,480	-0-	7,722,480
SAC REG TRAN DIST	Sacramento	Folsom Corr Dbl Tracking	1,600,000	-0-	1,600,000
SDMTDB	San Diego	LRV Acquisition	8,800,000	-0-	3,600,000
SF PUC MUNI	San Francisco	Streetcar Line & Renov.	329,079	-0-	329,079
CALTRANS	Santa Clara	PCS Equip. Maint. Facility	8,694,000	-0-	8,694,000
BART	Alameda	Rehab Transit Vehicles	951,500	-0-	951,500
LACTC - Simi Valley	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Chatsworth	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Van Nuys	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Burbank	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Santa Clarita	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Sylmar/San Fernando	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - El Monte	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Baldwin Park	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Covina	Los Angeles	Commuter Rail Station	234,087	234,087	-0-
LACTC - Pomona	Los Angeles	Commuter Rail Station	234,087	234,088	-0-
LACTC - Claremont	Los Angeles	Commuter Rail Station	234,087	234,088	-0-
LACTC - Commerce	Los Angeles	Commuter Rail Station	234,088	234,088	-0-
LACTC - Norwalk	Los Angeles	Commuter Rail Station	234,088	234,088	-0-
LACTC - Glendale	Los Angeles	Commuter Rail Station	234,088	234,088	-0-
SAC REG TRAN DIST	Sacramento	Dos Rios LRT Station	300,000	-0-	300,000
*RIVERSIDE CTC	Riverside	Cars & Locomotives	8,650,000	-0-	8,650,000
*RIVERSIDE CTC	Riverside	SCRRA-Rail Electrification Study	200,000	-0-	200,000
LIVERMORE/AVT	Alameda	Transit Center	84,500	-0-	84,500
GLDN EMPIRE TRANS	Kern	Bus Rehabilitation	625,000	-0-	625,000
COUNTY OF SONOMA	Sonoma	NWP RR ROW	635,000	-0-	635,000
SAC REG TRAN DIST	Sacramento	Light Rail Paint Booth	500,000	-0-	500,000
CITY OF IRVINE	Orange	Intermodal Station Improvement	1,136,500	-0-	1,136,500
SAC REG TRAN DIST	Sacramento	M.O.W. Storage Facility	100,000	-0-	100,000
CITY OF ORANGE	Orange	Rail Depot Site	55,000	-0-	55,000
CITY OF DAVIS	Yolo	Intermodal Station Parking	63,000	-0-	63,000
COUNTY OF SAN JOAQUIN	San Joaquin	Stations-Lodi, Manteca, Tracy	200,000	-0-	200,000
SAC REG TRAN DIST	Sacramento	Rail Extn. Corr Study	50,000	-0-	50,000
CITY OF WOODLAND/DAVIS	Yolo	Commuter Rail Study	25,000	-0-	25,000
CITY OF TURLOCK	Stanislaus	Turlock Center	29,700	-0-	29,700
CITY OF MADERA	Madera	Madera Intermodal Station	976,920	-0-	976,920
GGBH&T	Marin	Ferry Vessel Replacement	425,179	-0-	425,179
TOTAL			\$142,108,000	\$64,000,000	\$65,495,000





RIVERSIDE COUNTY TRANSPORTATION COMMISSION

DATE: November 13, 1991

TO: Riverside County Transportation Commission

FROM: Jack Reagan, Executive Director

SUBJECT: Commuter Rail Electrification Status Report

As we have discussed during previous meetings, the Southern California Edison Company (SCE), the South Coast Air Quality Management District (SCAQMD), members of the California Transportation Commission (CTC), and certain environmental groups have advocated that the Southern California Commuter Rail system should be electrified from its beginning. Some have advocated allowing the first three lines to begin service in October 1992 with diesel locomotives, subject to commitments to electrify as soon as possible. Since the Riverside to Los Angeles commuter rail service on the Union Pacific alignment would be the fourth line, and is scheduled to begin service in Spring 1993, RCTC has advocated that this service should also be allowed to begin with diesel locomotives which are leased. RCTC has indicated its support for expedited rail electrification of the Riverside to Los Angeles line, but has not wanted the service delayed.

In order to provide an appropriate basis for decision making for all the affected agencies, the Southern California Regional Rail Authority (SCRRA) is coordinating a Regional Rail Electrification study effort, with the coordination being accomplished by a multi-jurisdictional/interests Task Force and designated committees. Bruce Nestande serves as the Chairman of the Task Force. RCTC has committed to pay its proportionate share of the study effort, subject to credits for previous work done for RCTC by Morrison-Knudsen, and has supported the use of some portion of the balance of its Transit Capital Improvement (TCI) grant which will not be used to purchase locomotives if such equipment is leased. **Bruce Nestande will be present at the November 13, 1991 meeting to provide a progress report on the work of the Task Force.**

Some of the major issues related to rail electrification include the following:

1. Is it appropriate to consider electrification for only commuter rail, or should electrification of freight railroads which generate most of the rail related pollution also be considered?
2. Is it appropriate to consider electrification of a single, consolidated freight corridor and enable other commuter lines to operate with diesel locomotives?

3. Is it possible to develop less polluting locomotives so that it may not be necessary to make the major expenditures to capitalize for rail electrification?
4. If it is desirable to electrify rail, should implementation of commuter rail be deferred or should lines be allowed to start with diesel or cleaner fuel locomotives? If so, how much service or what time frame should govern the initial allowed service?
5. How should rail electrification be funded?
 - a. Should existing rail service proposals be modified to delete some lines (Example: Riverside to Hemet/San Jacinto) so that currently programmed Proposition 108 and 116 bond funds may be shifted to pay for rail electrification?
 - b. Should SCRRRA condition rail electrification on the availability of Federal funds? Since it is so late in the current Federal reauthorization process, would that mean that we would have to wait until 1996?
 - c. Should the California Public Utilities Commission support SCE and the Los Angeles Department of Water and Power capitalizing rail electrification with costs passed broadly to utility rate payers based upon broader benefits of clean air?
 - d. Using any funding scenario, should freight railroads be required to assist in capitalizing electrification?

Bruce Nestande will advise the Commission regarding how the Task Force will address these issues.

ADMINISTRATIVE COMMITTEE AND STAFF RECOMMENDATION

Receive and file

JR:sc

INLAND
VALLEY
Daily **Bulletin**

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Thursday, November 14, 1991

Rail officials can't place the future

Electric trains are coming, but nobody seem to knows when

By Lee Peterson
Daily Bulletin

DIAMOND BAR — Electric commuter rail is the way of the future, they all agree.

They just can't agree when the future starts.

"They" are the Southern California leaders who want to provide a new way for far-flung commuters to get to work.

Some are convinced it's better to roll the trains out as soon as possible, and

that means diesel-powered engines.

Others want to see electric trains from the beginning, and believe the estimated four-year delay is worth it.

The South Coast Air Quality Management District, which has decided to set aside earlier support for temporary diesel power on the first three commuter lines, says it has the legal power to control how trains are powered.

The AQMD is scheduled in February to weigh its position, after a \$700,000 report on rail electrification is due to be

completed by the rail authority. The directors may relax their stance to allow transportation officials to start a fourth commuter rail line with diesel, in lieu of electrification.

Officials of the Southern California Association of Governments said the AQMD is within rights to allow diesel rail, as long as 90 percent of all rail is converted over to electric by 2010.

With all the cars taken off the road by commuters who prefer riding the

See **TRAINS**/Page 2

Trains /from A1

train, SCAG said there will be an air quality benefit, but AQMD air quality engineers figure it differently, that an increase in smog-causing emissions will result.

Furthermore, AQMD Executive Officer James Lents said they might not have until 2010 to switch to electric rail.

"We felt that state law said we had to do as much as we could possibly do to get rid of those emissions," Lents said. In other words, it may be a violation of the California Clean Air Act if the AQMD doesn't push for electric rail immediately.

The Southern California Regional Rail Authority plans to start limited operation of three commuter rail lines using diesel engines starting in 1992, including one through the Inland Valley from San Bernardino to downtown Los Angeles.

AQMD board members from Riverside have expressed support for adding a fourth line, from Riverside to Los Angeles, on the early opening, diesel-powered schedule.

The Valley

- Police Report
- Obituaries
- Letters
- Dan Walters

Commuter train diesel engines get once-over

By Joseph Ascenzi
Staff Writer

LOS ANGELES — The Los Angeles County Transportation Commission has taken further steps to ensure that the diesel engines which will power the five-county commuter rail system scheduled to begin next year will meet clean-air regulations.

The engines, which were ordered from General Motors Corp. earlier this year, have been modified to further reduce their nitrogen oxide emissions, a major cause of air pollution, said Clara Potes, spokeswoman for the commission.

"By changing the timing of the

“The new modifications . . . will make our diesel commuter rail the cleanest-burning (diesel system) in North America.”

— JACKI BACHARACH
Member of Southern California Regional Rail Authority

engines even more, they can get a reduction of nitrogen oxide emissions of 20 percent,” Potes said.

Also, by using sulfur fuel instead of conventional diesel fuel, an additional 10 percent reduc-

tion in nitrogen oxide can be achieved once the system begins operating in October 1992, Potes said.

“The new modifications . . . will make our diesel commuter rail the cleanest-burning (diesel

system) in North America,” said Jacki Bacharach, a member of the Southern California Regional Rail Authority, a subcommittee of the Transportation Commission.

A report detailing the changes to the diesel engines was read Friday during the rail authority's regular monthly meeting. The panel did not vote on the matter.

Earlier this year, the rail authority purchased 17 diesel engines, despite plans to eventually convert the lines to electric engines.

The rail authority initially asked for clean-burning engines.

then requested even more modifications in the vehicles after making a second trip to Detroit to inspect clean-air technology.

Transportation officials argued that the need to bring commuter rail to Southern California as soon as possible outweighed claims by environmentalists that the opening of the system should be delayed until after the lines could be electrified.

The rail system, dubbed Metrolink, will transport rush-hour commuters from Los Angeles, San Bernardino, Orange, Riverside and Ventura counties to downtown Los Angeles.

VOICE OF THE PEOPLE

Electrify rail lines

Nov. 1

Everyone seems to agree that electrification of our rails, including commuter rail, is a good idea. The most advanced rail systems in the world run on electricity. They're sleek, reliable, fast and extremely clean.

The problem is that the five Southland county transportation agencies have not set aside funds for, nor even committed to, electrify commuter rail.

Today, there are plans for eight new commuter rail lines to start service powered by locomotives. Many environmentalists and public officials advocate postponing the start-up of these lines until they are electrified, which will result in a cleaner, quieter and more modern service.

Why not a compromise that helps to solve both the congestion and pollution problems? Both the South Coast Air Quality Management District, the California EPA and the California Resources Board, as well as many environmentalists, have suggested that the first three commuter lines, including the line between San Bernardino and downtown Los Angeles, commence service with diesel trains to get the system in operation, then begin phasing in electric trains on all lines, including those that begin service with diesel. Electrification of the first three lines can be done during hours when the diesel trains don't operate.

Commuter trains for other areas,

which are scheduled to begin in 1995, will not be delayed by electrification, provided county transportation agencies make a commitment soon.

The time is right for compromise. Pollution from dirty diesel locomotives will increase from 3 percent of the air pollution problem currently to 10 percent in 2010 unless a way is found to pay for electrification. In addition, diesel commuter rail may actually worsen the smog problem of harmful ozone-forming pollutants because diesel trains are so dirty, compared to the cars of commuters they take off the road. Let's electrify commuter rail lines as soon as possible.

WILLIAM E. LEONARD

Chairman

California Transportation Commission

The Valley

- Obituaries
- Letters
- Crime news
- Jack Anderson

Opinion / Police Report

SCAG tells AQMD: Stay out of transport issues

Fears start-up
of commuter rail
will be delayed

By Donna Johnson
Staff Writer

LOS ANGELES — Regional planning officials put the air quality agency on notice Thursday to not overstep its bounds for making decisions on the planned Southland commuter rail network.

The Southern California Association of Governments executive board voiced fears that the South Coast Air Quality District's surprise move last week — rescinding its support of the temporary use of diesel trains — will delay the scheduled fall start-up of the system.

The initial line will run on South Pacific tracks through the San Gabriel Valley, linking Los Angeles and San Bernardino.

"We need the air district to keep its mitts off transportation measures," said board member Judy Wright, a Claremont councilwoman.

Wright cited a commitment by the five-county Southern California Regional Rail Authority, which is coordinating the commuter rail proposals, to switch to electric-powered engines as soon as it's feasible.

SCAG board members cited state laws that give them the final say on regional transit projects and pointed to the air district's approval of SCAG's commuter rail measures that are part of the clean-air plan.

The board reiterated its ruling that the proposed commuter rail system, called Metrolink, complies with the regional anti-smog plan, which calls for a 90-percent use of cleaner-burning electrified trains for passenger and freight lines by 2010.

AQMD spokesman Bill Kelly said the district is trying to get a firm commitment on when the trains will be electrified. The district board withdrew its support for the rail plan while it compiles a refined report on potential pollution, he said by phone from AQMD headquarters in Diamond Bar.

But SCAG is worried that the state Transportation Commission, which opposes diesel trains, will use the AQMD's hesitation to fuel its fight for an all-electrified system.

"We need to send a message to the district," said SCAG board member and Monrovia Mayor Robert Bartlett. "We need to say: 'This is our baby and you blessed it.' Then we need to stand firm on this and make sure the public knows who's jamming the process."

Please see TRAINS / B2

TRAINS

From B1

Jacki Bacharach, a Los Angeles County transportation commissioner who is the rail authority's chairman, told the SCAG board that any pollution caused by the diesel trains will be partially offset because commuters will be leaving their cars home.

Bacharach said the locomotives LACTC purchased have a reduced-pollution design. "This is cleaner diesel. We are following the Air Quality Management Plan."

A newly formed rail authority task force is conducting a \$720,000 study on the possibility of having trains electrified soon-

er than 2010. The analysis is set for completion by Jan. 30, 1992.

"The driving force behind this task force is the Air Quality Management Plan," said Norm Jester, task force director.

The 17 commuter diesel rail line engines, added to the 12 diesel passenger trains already running in Southern California, will slightly increase oxides of nitrogen (NOx) emissions in the South Coast Air Basin, said SCAG's Transportation Planning Director Jim Gosnell.

Of 1,208 tons of NOx emitted per day in 1987, 30.9 tons came from passenger and freight trains and boats, Gosnell said. "The new commuter rails will add 0.7 ton per day, or 2 percent of the total from trains."



November 8, 1991

CONTACT: CLARA POTES-FELLOW/STEPHANIE BRADY
TRANSPORTATION NEWS BUREAU
(213)244-6566/ 244-6792

**METROLINK COMMUTER RAIL LOCOMOTIVES MODIFIED
TO YIELD 30% REDUCTION IN NO_x**

The Southern California Regional Rail Authority announced today that a major modification in the diesel locomotives for the METROLINK commuter rail service will yield an additional 30% reduction of Nitrogen Oxide (NO_x) emissions. The reduction means that the diesel locomotives will substantially reduce emissions to the air as compared to standard railroad passenger locomotives.

Earlier this year, the SCRRA purchased 17 diesel commuter rail locomotives from General Motors, which manufactures engines 25% cleaner than standard passenger locomotive fleets. Later the SCRRA asked the manufacturer to modify the engines to further reduce Nitrogen Oxide emissions in the locomotives ordered by the SCRRA.

"The new modifications combined with the use of a low sulfur fuel and the institution of some operational changes will reduce an additional 30 percent of the NO_x emissions, making our diesel commuter rail the cleanest in North America," said Jacki Bacharach, SCRRA chair.

(MORE)

**METROLINK COMMUTER RAIL LOCOMOTIVES MODIFIED
TO YIELD 30% REDUCTION IN NO_x**

November 8, 1991

Page 2

The upgraded diesel locomotives are being designed to specifically meet air quality regulations for Southern California.

METROLINK will start operations in October 1992 transporting peak hour commuters from San Bernardino County, Ventura County and Santa Clarita Valley to Los Angeles' Union Station.

#

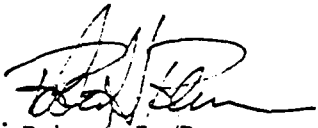
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RJT:pls:11.08.91

(MORE)

Memorandum

To: Chairman and Commissioners

File No.: M33
BOOK ITEM 2.5(g)
ACTION


From: Robert I. Remen

Date: November 5, 1991

Ref.: REQUEST FROM RIVERSIDE COUNTY TRANSPORTATION COMMISSION TO AMEND FY 1991-92 TCI PROGRAM PROJECT TO CONTRIBUTE FUNDS FOR THE SOUTHERN CALIFORNIA RAIL ELECTRIFICATION STUDY

Riverside County Transportation Commission (RCTC) has requested that the Commission consider amending Riverside's \$8.85 million FY 1991-92 Transit Capital Improvement (TCI) project to purchase diesel locomotives and rolling stock and redirect a portion of those to funds to assist in supporting the Southern California Regional Rail Electrification Study effort (attachment). RCTC is a member of the Southern California Regional Rail Authority (SCRRA) and has participated in the discussions concerning diesel versus electric locomotives and the diesel's impact on air quality in the South Coast Air Basin. RCTC is involved in the SCRRA effort to identify candidate rail lines, both freight and passenger, which are conducive to electrification and accelerate its implementation.

The Southern California Regional Rail Electrification Study, according to SCRRA, will cost approximately \$720,000. The SCRRA is seeking funding for the study and has been talking to the railroad corporations, the South Coast Air Quality Management District, Southern California Edison, Los Angeles Water and Power, utility companies, and interested parties. Currently, the South Coast Air Quality Management District has contributed \$50,000 towards the full cost of the study and is also contributing staff time worth approximately \$100,000. The SCRRA member agencies (Los Angeles County Transportation Commission, Riverside County Transportation Commission, Ventura County Transportation Commission, San Bernardino Association of Governments, and Orange County Transportation Authority) are contributing \$240,000 in local funds for the study. Further, it is staff's understanding that Southern California Edison and Los Angeles Water & Power have respectively contributed \$70,000 and \$30,000 towards funding the study. The SCRRA would still require approximately \$330,000, exclusive of the in-kind staff time from SCAQMD, to fully fund the proposed electrification study which is currently underway.

RCTC is requesting that the Commission amend the Riverside FY 1991-92 TCI project and redirect a portion of the State funds towards the Southern California Regional Rail Electrification Study to cover the balance of the funds needed for the study. Staff has reviewed the request with the Department's Division of Rail and find that the study is an eligible activity under the TCI program. Further, Commission staff have been informed by the Department's Legal Division that since the consultants who are performing the

study were competitively selected in the original contract to perform design engineering and construction for the commuter rail system, including assessing electrification needs, an augmentation of the consultant's contract with State TCI funds is permissible.

Based on the information received from RCTC and the Department, staff recommends:

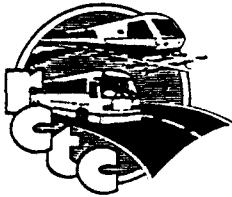
- o That the SCRRA continue to aggressively pursue the funding needed for the \$720,000 study;
- o That the RCTC request to use FY 1991-92 TCI funds from the RCTC locomotive and rolling stock project be approved conceptually, pending the identification of the exact amount needed to cover the balance of the funds needed to fully fund the Southern California Rail Electrification Study;
- o That the local match for the TCI funds be covered with the local and private contributions from the other contributors; and
- o That the TCI funds represent the "funding source of last resort."

RIR:RC:cv

19:CV17

Attachment

NOV 4 1991

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

November 1, 1991

Mr. William Leonard
Chairman
California Transportation Commission
1120 "N" Street
Sacramento, CA 95814

Dear Chairman Leonard:

In the FY 1991-92 Transit Capital Improvement Program (TCI) cycle, the Riverside County Transportation Commission (RCTC) received California Transportation Commission (CTC) approval of a TCI grant (\$8.85 million) for the purchase of commuter rail cars and locomotives.

As you are aware, subsequent to the time the TCI program was adopted, the subject of rail electrification became of increasing interest. In light of CTC's apparent desire not to take actions in approval of commuter rail capital funds which may not be consistent with implementation of an electrified system, the RCTC in conjunction with the SCRRA, reviewed our equipment procurement with respect to the approved TCI grant and abandoned our plan to purchase diesel locomotives. This action was based upon the assumption that Riverside to Los Angeles service will be initiated by Spring of 1993 with either electric locomotion or with leased diesel locomotion.

By not planning to procure diesel locomotives, thereby configuring the equipment procurement to not be in conflict with the evolving electrification discussions and study effort, the RCTC identified a potential range of \$800,000 to \$1,500,000 of TCI funds (exclusive of match) in the approved grant which would be unused.

Currently, the Southern California Regional Rail Authority (SCRRA) has underway the "Southern California Regional Rail Electrification Program" work program which is an effort to identify candidate rail lines, both freight and passenger, which are conducive to electrification and accelerate their implementation. This effort will be completed in January 1992 and the program budget for the study effort is \$720,000. (budget attached).

The SCRRA share for the study effort is 1/3 or \$240,000. The Riverside County Transportation Commission, at their meeting on October 9, 1991, acted to provide the balance of funds, after rail

car procurement, to support the rail electrification study effort. Therefore, the RCTC respectfully requests the CTC to consider the use of such TCI funds to assist in supporting the Southern California rail electrification study effort.

If appropriate, the RCTC requests CTC consideration of conceptual support for the use of these funds at your November meeting and, if such action is affirmative, approval of a specific funding amount at your December meeting.

Should you need additional information or have any questions please call me at your earliest convenience.

Sincerely,



JACK REAGAN
Executive Director

enclosure

JR:HS

cc: Robert Remen, CTC
Robert Chung, CTC
John James, Caltrans
Richard Stanger, SCRRA
Frank Flores, SCRRA
Sharon Greene, SCRRA

NOVEMBER 4, 1991

Police Report
Obituaries
William Rusher
Russell Baker

Valley Capsules

AQMD to review stance on diesels

Board will rehear
electrification issue

By **Steve Scauzillo**
Environmental Writer

DIAMOND BAR — Just when you thought the issue was settled, think again.

The South Coast Air Quality Management District quietly passed a resolution last week that undermines the board's position in support of diesel trains for Southern California's first three commuter rail lines, with assurances for conversion to cleaner-burning electric rail cars.

In a surprise move, the board supported a motion by Stephen Albright, the governor's appointee, to reconsider the policy adopted on Oct. 4, by an 8-3 vote. The board will rehear the issue at its Feb. 7, 1992 meeting.

According to local board member Henry Morgan, a Covina city councilman, Albright wanted to include a fourth rail line proposed to run from Riverside to Los Angeles and through the San Gabriel Valley in the resolution.

At issue is whether the district would allow the Los Angeles County Transportation Commission to go ahead with 17 diesel-powered trains it has purchased to use on the first three lines.

The district's October resolution says diesel should be used as an interim step but that electrification should proceed as soon as possible after the lines are established. The district board believes that any mass transit system will reduce single-occupancy cars and pollution.

In the earlier resolution, the board requested that future allocation of rail funds from Proposition 116 by the California Transportation Commission be consistent with the district's clean air plan, which calls for conversion of 90 percent of all rail lines to electric by the year 2010.

In a letter to James Lents, AQMD executive officer, Albright argued that the district's policy on electrification was made "in haste" and should be reconsidered only after a report on electrification from the LACTC is complete in January.

Albright's resolution says the district should not support conversion from diesel to electric without more cost analysis of such a conversion.

Board member Larry Berg is opposed to sticking with diesel trains because diesel exhaust contains cancer-causing particulates and contributes to visibility problems in the air basin.

Vice Chairman Henry Wedaa has said the board's Transportation Committee, which he heads, is considering an amendment to the Air Quality Management Plan to accelerate the date for electrified trains to the year 2000.

Let's Get Rail Rolling

Diesel now doesn't preclude electrification over longer run

Southern California is plunging into an ambitious, multibillion-dollar expansion of a transportation network that, as is, barely holds the region together.

To get some of these projects off to a running start will take a trade-off that makes some environmental activists unhappy. But other green groups back a brief trade-off. They are on the right track.

Under the plans of regional county transportation commissions, freeway gaps will be closed, some roads will turn into fast-flowing streets, bus fleets will grow and high-speed commuter trains will one day link six counties. Trains of double-deck coaches will run between Los Angeles and Orange, Riverside, San Bernardino and Ventura counties and—eventually—San Diego County.

The venture is on such a grand scale that work will continue into the next century. That makes a quick start all the more important. Some environmentalists oppose that running start because the plan calls for some use of diesel locomotives, which would dirty already polluted air. But

it is not an either-or choice between getting a running start with new rail projects or keeping the air breathable. The rail plan can accomplish both goals.

Here's how: The rail program has certain funding, so work can get under way. Bonds approved last year through the passage of Proposition 116 will pay for some of the 400 miles of commuter rail service. The trains will be electrified, but to get service started on some lines by 1993, the commissions' Regional Rail Authority would temporarily use state-of-the-art diesel locomotives.

Some environmentalists ask what smoking diesels have to do with the "clean air" part of Proposition 116. But other environmental groups, the Clean Air Coalition among them, see no contradiction in terms. They are right. They want the rail authority to meet deadlines for eliminating diesel and commit itself to electrification before service starts.

Those are reasonable requests. Transit agencies should get that down in writing and then get back to meeting target dates for rail service.

Date: October 28, 1991

To: Executive Committee

From: Staff

Subject: Railroad Electrification Issue

Background

The California Transportation Commission has recently raised the issue of Commuter Rail electrification, in the context of decisions concerning the allocation of Proposition 116 funds for new services in the Southern California region.

SCAG developed the commuter rail and transit measures in the 1989 RMP and AQMP, as well as the 1991 Revised AQMP, assuming the interim use of diesel-electric locomotives to reduce automobile congestion and related pollution, identified as a Tier I implementation measure in the 1989 AQMP. SCAG also developed the comprehensive Railroad Electrification in the 1989 and Revised 1991 Air Quality Management Plan's, both for passenger and freight railroads, to achieve the 90% reduction (by 2010) in the criteria pollutants (SOx, NOx, PM10, CO, ROG), identified as a Tier II implementation measure in the 1989 AQMP.

SCAG, CTC, SCRRA, SCAQMD, the County Transportation Commissions, utilities, and environmental groups all generally agree that railroad operations (freight and passenger) identified in the adopted AQMP should be electrified by 2010. The disagreement exists in responding to the following:

Issues

- o Should the Commuter Rail services identified in the Regional Mobility Plan, as an important component in addressing regional congestion relief, be electrified from the onset?
- o Does the failure to expeditiously implement a Tier I Transportation Control Measure (commuter rail transit), required in the State Implementation Plan under the the Federal Clean Air Act, jeopardize federal funding of other important transportation projects?
- o Should the Commuter Rail diesel operation be implemented as scheduled while an accelerated railroad electrification planning and programming is in progress?
- o How does the implementation of diesel powered rail services impact the Air Quality in the South Coast Air Basin?

- o And finally, how does the delay in the implementation of commuter rail services (five to six years) potentially impact the voter in general and their approval of the 1992 proposed rail bonds in particular?

The issues raised regarding emissions from diesel rail operations, including both freight and passenger service, will require a detailed analysis. Measure 14, Railroad Electrification, in the 1989 and 1991 Air Quality Management Plans, recognizes the complexity of this issue and calls for a comprehensive study as a prelude to implementation.

Early implementation of rail electrification, on an accelerated schedule beyond that called for in the 1989 AQMP and 1991 revised AQMP, would not be warranted based solely on the emissions from commuter rail service, as presently planned. SCAG's RTIP Conformity analysis does not indicate any short term air quality problems due to commuter rail implementation on the current schedule.

Staff has prepared a detailed background and information package containing the following:

- o BACKGROUND RAILROAD ELECTRIFICATION ISSUES
- o APPENDIX A-MARK PISANO'S LETTER TO THE HON. WILLIAM LEONARD, CHAIRMAN OF THE CALIFORNIA TRANSPORTATION COMMISSION DATED OCTOBER 18, 1991
- o APPENDIX B-SCAQMD RESOLUTION CONCERNING RAIL ELECTRIFICATION
- o APPENDIX C-SCRRA ACCELERATED ELECTRIFICATION PROGRAM
- o APPENDIX D-TEXTS OF MEASURE 14 1991 AND 1989 AQMP'S
- o RAILROAD ELECTRIFICATION MEASURE, DESCRIPTION AND SCHEDULE

Recommendations

1. SUPPORT THE IMPLEMENTATION OF REGIONAL COMMUTER RAIL OPERATIONS AS PLANNED IN THE TRANSIT COMPONENT OF THE REGIONAL MOBILITY PLAN AND THE 1989 AND REVISED 1991 AIR QUALITY MANAGEMENT PLAN. (TCC AND EEC APPROVED)
2. SUPPORT THE EARLY ELECTRIFICATION OF RAILROAD OPERATIONS (PASSENGER AND FREIGHT) TO IMPROVE AIR QUALITY IN THE SOUTHERN CALIFORNIA REGION. (TCC AND EEC APPROVED)
3. SUPPORT AND PARTICIPATE ACTIVELY IN THE ACCELERATED RAILROAD ELECTRIFICATION STUDY CURRENTLY UNDER WAY. (TCC AND EEC APPROVED)
4. REVIEW THE REGIONAL RAILROAD ELECTRIFICATION (PASSENGER AND FREIGHT) IMPLEMENTATION PLAN AND PROGRAMS AFTER THE COMPLETION OF THE STUDY, FOR THE POSSIBLE REVISION OF THE REGIONAL MOBILITY PLAN UPDATE, THE 92-93 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM AND THE AIR QUALITY MANAGEMENT PLAN. (TCC AND EEC APPROVED)

5. SCAG STAFF MEET WITH UTILITY AND FUEL SUPPLIERS, INCLUDING SOUTHERN CALIFORNIA EDISON, LOS ANGELES CITY DEPARTMENT OF WATER AND POWER, SOUTHERN CALIFORNIA GAS COMPANY; AS WELL AS THE COUNTY TRANSPORTATION COMMISSIONS, CALIFORNIA TRANSPORTATION COMMISSION, COMMUTER AND FREIGHT RAIL COMPANIES, AND OTHER TRANSPORTATION ORGANIZATIONWS ON THE RAILROAD ELECTRICATION STUDY. (EEC APPROVED)
6. REAFFIRM SCAG'S ROLE AND DETERMINATIONS IN FINDING THE 1991-1997 REGIONAL TRANPORTATION IMPROVEMENT PROGRAM IN CONFORMANCE WITH THE 1989 AIR QUALITY MANAGEMENT PLAN, BASED UPON RIGOROUS TRANSPORTATION MODELING AND TRANSPORTATION CONTROL MEASURE EVALUATION. THIS INCLIUDES THE TIER I ACTION REQUIREMENT TO EXPEDITIOUSLY IMPLEMENT REGIONAL COMMUTER RAIL TRANSIT AS WELL AS TIER II COMMITMENT TO ELECTRIFY RAILROADS AS QUICKLY AS POSSIBLE TO REACH 90% EMISSION REDUCTIONS FROM THIS SOURCE BY 2010. (EEC APPROVED)

Note: These actions were taken after the Committee's extensive discussion, following presentations by staff of SCAG, LACTC, and Southern California Edison.



FACTS

SCAG's Role in RMP and AQMP Planning Commuter Rail and Railroad Electrification

- o SCAG is strongly supportive of the electrification of railroad operations to improve air quality in the Southern California region. SCAG initiated the investigation of railroad electrification to improve air quality and included it as a control measure in the 1979 and 1982 Air Quality Management Plans. SCAG wrote the Railroad Electrification Measure for the 1989 and Revised 1991 AQMP's. SCAG has carried the comprehensive Railroad Electrification Study in its Overall Work Program since FY 1990. SCAG supports the Railroad Electrification program contained in the AQMP.
- o SCAG developed the commuter rail and transit measures in the 1989 RMP and AQMP, as well as the 1991 Revised AQMP, assuming the interim use of diesel-electric locomotives to reduce automobile congestion and related pollution, identified as a Tier I implementation measure in the 1989 AQMP.
- o SCAG also developed the comprehensive Railroad Electrification in the 1989 and Revised 1991 Air Quality Management Plan's, both for passenger and freight railroads, to achieve the 90% reduction (by 2010) in the criteria pollutants (SOx, NOx, PM10, CO, ROG), identified as a Tier II implementation measure in the 1989 AQMP.
- o SCAG is required by law to determine the conformity of the Regional Transportation Improvement Program to the requirements of the Federal Clean Air Act.
- o SCAG finds the implementation of Commuter Rail service with the interim use of diesel locomotives to be in conformity with the State Implementation Plan (SIP) under the Federal Clean Air Act. The Regional Transportation Improvement Program and the required Federal Clean Air Act Conformity Finding is the means that SCAG uses to ensure that the implementation of the Transportation Control Measures is on the schedule called for in the adopted AQMP.
- o Under the Interim Conformity Guidelines issued by EPA for compliance with the Federal Clean Air Act, SCAG is required to examine carefully the emission impacts of transportation projects in the Regional Transportation Improvement Program (RTIP).. SCAG is required to determine whether or not the RTIP shows emissions reductions for all relevant pollutants.
- o SCAG included estimates of temporary short term increases in Oxides of Nitrogen (NOx) from the interim use of diesel locomotives on commuter trains in the federally required analysis, as well as the reductions in Carbon Monoxide and Hydrocarbon which the trains will cause by putting people on transit. The analysis showed that the program met the required reductions and conforms under the Federal Guidelines.

Expeditious Implementation of Transportation Control Measures

- o Expeditious implementation of TCM's is required for compliance with the Federal Clean Air Act. Guidance by the U.S. EPA and U.S. DOT dated June 7, 1991, states:

"Expeditious implementation is generally accepted to mean as soon as practicable, but in no case later than would have occurred under the original implementation plan schedule."

To date, the regional commuter rail program identified in detail and schedule in the adopted RMP, and included in the Transit TCM of the adopted 1989 AQMP has been on schedule for implementation.
- o SCAG is of the opinion that the need for future (Tier II) Railroad Electrification to comply with the adopted AQMP should not and cannot be used to stop expeditious implementation of (Tier I) Metro-link Commuter Rail service in Southern California. Commuter Rail is a significant transit improvement in the Air Quality Management Plan which will reduce automobile related emissions required by the AQMP and the Federal Clean Air Act. This aspect of implementation (Commuter Rail Transit) does not prevent or preclude future electrification of railroads (freight and passenger) to control emissions from this source by 2010.
- o Failure to implement Commuter Rail, which will reduce auto use and contribute to significant reduction of hydrocarbons and carbon monoxide emissions in the near term, could subject the region to sanctions for failure to expediously implement a required control measure. And, there is no reason to delay commuter rail implementation, as rail electrification can be done and often is done on operating railroads throughout the world with minimal disruption of existing services.

Present Commuter and Intercity Rail Service

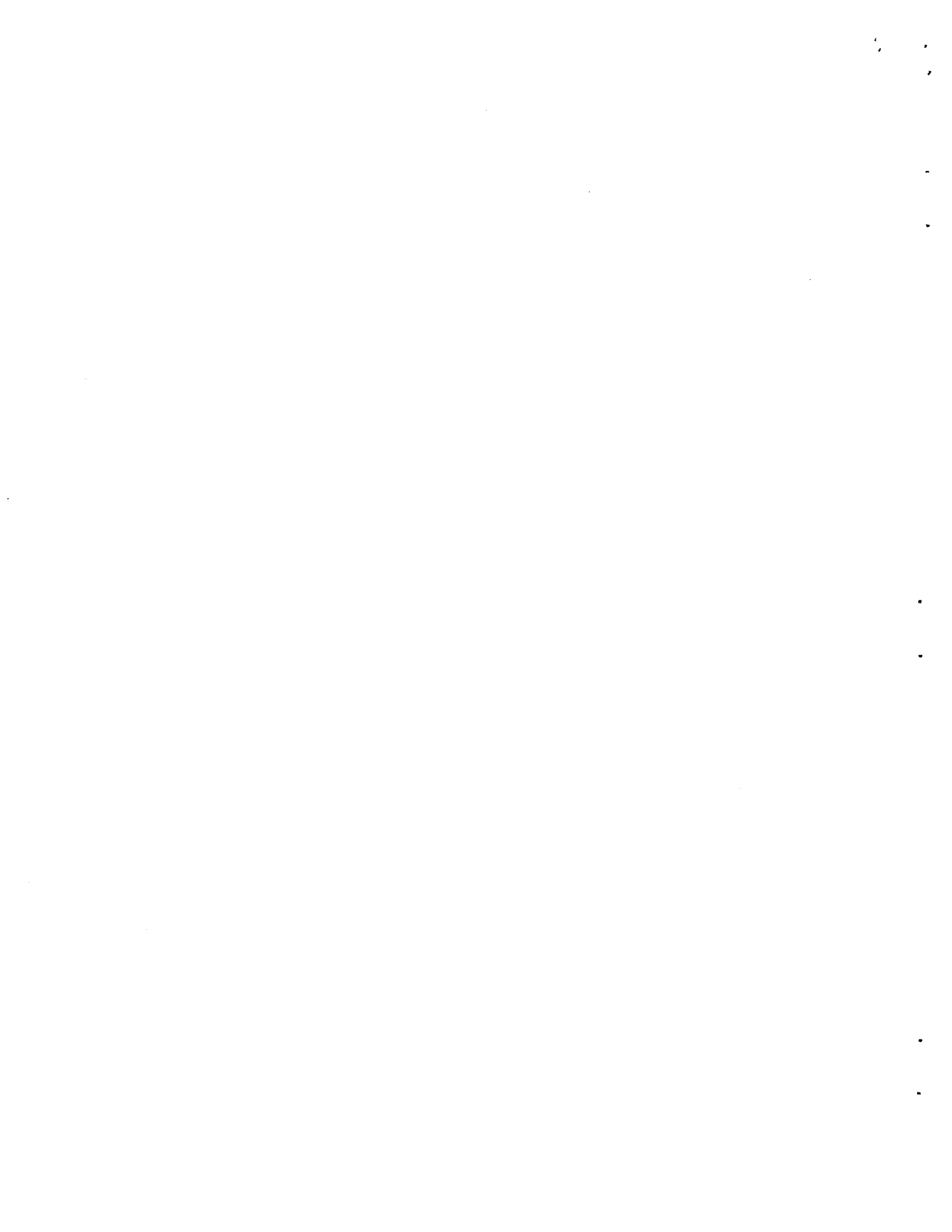
- o At present there is only a single commuter round trip (two trains) operating from Los Angeles to Orange County on the Santa Fe route to San Juan Capistrano via Fullerton. Amtrak offers 8 additional round trips to San Diego via Fullerton and long distance service to Las Vegas and Denver operates via Fullerton and Riverside. Los Angeles to Santa Barbara Amtrak intercity service via Simi Valley runs 3 round trips daily. Long distance service to Chicago and New Orleans run via Pasadena on the Santa Fe and Pomona on the Southern Pacific lines.

New Commuter Rail Service

- o LA to Moorpark on the SP Coast Line (1992); eventually to be extended to Ventura (SP Line SCRRA has operating rights on S.P. tracks and easements); this route has significant S.P. freight traffic volumes and Amtrak service.
- o LA to Santa Clarita on the SP Saugus Line (1992--uses the Coast line from downtown LA to Burbank Junction) (SP Line SCRRA has operating

rights on S.P. tracks and easements); this route has some freight activities, occasionally heavy traffic from diversion, and Amtrak service through Glendale.

- o LA to San Bernardino on a combination of the SP State Street Line and the SP Baldwin Park Branch (1992) (SP Line SCRRA purchase of line); this route has some freight activity to S.P. customers in the Azusa and Basset area.
- o LA to Riverside on the UP Second Subdivision (1993) (UP Line SCRRA has operating rights over U.P. trackage, easements and ownership of minor segments in the LA CBD); U.P. operates significant freight volumes, especially between City of Industry Yard and I-605 where S.P. freight operations share trackage to Orange County and some Harbor destinations.
- o LA to Orange County on the ATSF San Bernardino and San Diego Subdivisions, and extension of the existing commuter service to Oceanside (1993) (ATSF Line under negotiation as to status); significant intercity Amtrak service and significant Santa Fe freight service volumes, especially between LA Hobart Yard and Fullerton.
- o LA to Riverside on the ATSF San Bernardino Subdivision (1995) (ATSF Line under negotiations as to status); significant Santa Fe freight service volumes, primary Santa Fe freight route, some Amtrak intercity passenger service.
- o San Bernardino/Riverside to Irvine on the ATSF San Bernardino, Olive, and San Diego Subdivisions (1995) (ATSF Line under negotiations as to status); significant freight operations, primary Santa Fe freight route (Olive to San Bernardino), significant intercity Amtrak passenger service (Santa Ana to Irvine).
- o Hemet to Riverside over the ATSF San Jacinto Subdivision, possibly extending west to LA (1995) (ATSF Line under negotiations as to status); limited local freight rail operations, future freight operations uncertain.
- o Redlands to San Bernardino over the ATSF Redlands Subdivision, possibly continuing west to LA (may be implemented after 1995) (ATSF Line under negotiation as to status); limited local freight operations, future freight operations uncertain.



BACKGROUND ON THE REGIONAL RAILROAD NETWORK

IN RELATION TO COMMUTER RAIL AND FREIGHT

ELECTRIFICATION POTENTIAL

SCAG Regional Mobility Plan Commuter and Intercity Rail Program

The SCAG region is favored by an extensive network of railroad main and branch lines, and there have been numerous proposals in the past to utilize these for commuter and intercity rail services. Commuter rail serves suburban travel markets with high peak and directional volumes and an average trip length of 20 miles. Intercity rail serves business and recreational trip markets and is not oriented towards daily or peak trips: it provides service between urban centers, with most trips over 50 miles in length. Using existing infrastructure, commuter rail can be used to test the patronage potential of corridors without the need for major new fixed guideway transit facility construction.

Originally 5 Commuter Rail lines were identified in the 1989 Regional Mobility Plan for the SCAG region: LA-Moorpark, LA-Santa Clarita, LA-San Bernardino, LA-Orange County and Riverside-Irvine. Since the plan was adopted additional opportunities have been identified, including: Riverside-Hemet, San Bernardino-Redlands, Riverside-LA (via Fullerton) and Riverside-LA (via Ontario).

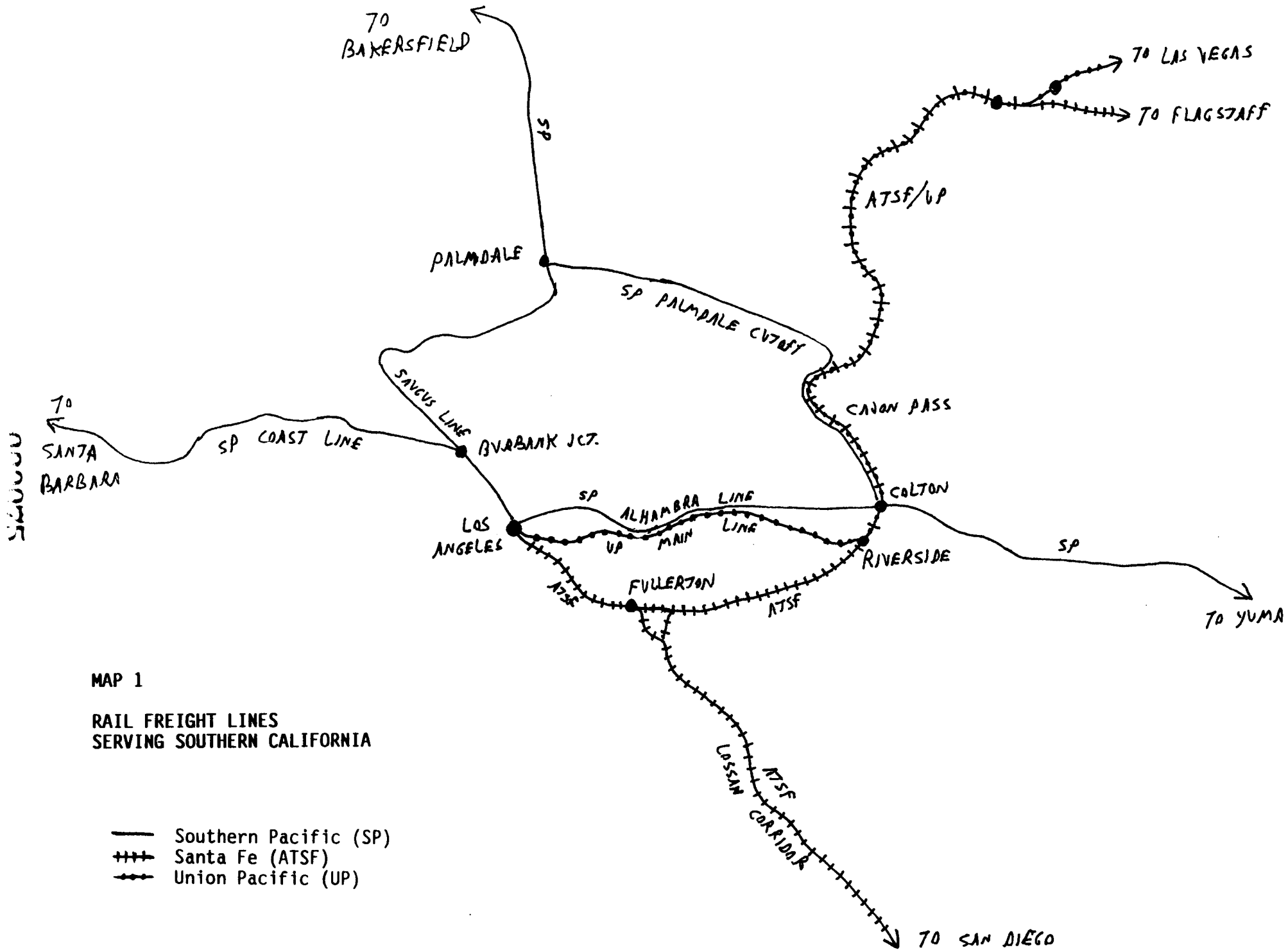
History of SCAG's Role in Rail Electrification

SCAG first identified railroad electrification of switching yards (Measure H-11, Electrify Rail Yards) in the 1979 AQMP as a control measure for this source. The 1982 AQMP identified electrification of rail haul operations (Measure M-8) as a control measure. The 1989 AQMP contained Measure 14 Railroad Electrification which specified a 90% reduction in all emissions from rail operations by 2010, with approximately 50% implementation assumed to occur by the year 2000. The 1991 AQMP Revision also contained Measure 14 Railroad Electrification, but reduced the level of implementation for year 2000 to 15%, due to the scale of complexity involved and lack of immediate financing opportunities, but retained the 90% emission reduction target for 2010.

SCAG identified the need for a rail electrification study to precede the implementation of Measure 14 in both the 1989 and 1991 AQMP's. SCAG has also included a Comprehensive Regional Railroad Electrification Study in the SCAG's Overall Work Plan since FY 1990.

In recent months, the California Transportation Commission and others have focused their attention on the implementation of Railroad Electrification as part of the implementation of the Commuter Rail Operation in the Southern California region.

SCAG, CTC, Caltrans, SCRAA, SCAQMD, County Transportation Commissions, utilities and environmental groups all agree that railroad operations identified in Measure 14 (freight and passenger) should be electrified by the year 2010.



MAP 1

RAIL FREIGHT LINES
SERVING SOUTHERN CALIFORNIA

- Southern Pacific (SP)
- - - Santa Fe (ATSF)
- · · Union Pacific (UP)

The Rail Freight Network

The SCAG region is served primarily by three major rail carriers, the Southern Pacific Transportation Co. (SP), Atchison, Topeka & Santa Fe Railway (ATSF), and Union Pacific Railroad (UP), which provide transcontinental freight service-- primarily containerized freight, including marine containers and domestic truck trailers on flatcars, and liquid and dry bulk freight.

The main lines in heavy freight service today are the following (see Map 1):

- o SP Alhambra Line from downtown east to Colton, where it connects to the Yuma Line, continuing east to Yuma, Arizona.
- o SP Coast Line, which runs from downtown LA north and west across the San Fernando Valley and up the coast to Santa Barbara and the Bay Area.
- o SP Saugus Line, which runs from downtown LA northwest to the San Joaquin Valley.
- o SP Palmdale Line, which connects the Yuma Line with the Saugus line north of the urbanized area.
- o ATSF San Bernardino or Third Subdivision, which runs from downtown LA east to Fullerton and Riverside, and connects to the First Subdivision which continues north across the desert.
- o UP Second Subdivision, which runs from downtown LA via Ontario to Riverside, and thence north across the desert.

In addition, the SP, ATSF, and UP all have branch lines from downtown to the Ports of Los Angeles and Long Beach. It is planned to consolidate most of the through traffic to the ports onto a consolidated rail corridor running along the SP's San Pedro Branch in the future (San Pedro Bay Ports Access Study, Phase 2: Railroad Access, SCAG 1984).

Factors Favoring Rail Freight Electrification

The above lines, approximating 571 route miles in the South Coast Air Basin, are listed in the 1991 Air Quality Management Plan as candidates for rail freight electrification. The AQMP calls for 90% of rail operations to be electrified in order to achieve air quality goals, but does not specify exactly which rail lines will be electrified. Long, high-tonnage freight trains, pulled by multiple locomotives (three, four, or more units) will be responsible for the bulk of railroad emissions.

Exactly which of these freight corridors will be electrified will depend upon freight tonnage moved over individual lines as we approach the target date for implementation, considering that one of the carriers, the SP, has a certain amount of flexibility to shift its trains to/from northern

California from one line to another.

A further consideration is that steep gradients are encountered on the ATSF and UP main lines, and on the SP Palmdale line in the Cajon Pass north of San Bernardino. Locomotives pulling trains up these grades en route to the east or to northern California need to produce much more power, resulting in higher fuel consumption and greatly increased emissions. Heavy grades provide further justification for freight railroad electrification, both from the viewpoint of railroad operational requirements and air quality.

Projected Freight Train Volumes, and Lines Likely to be Electrified

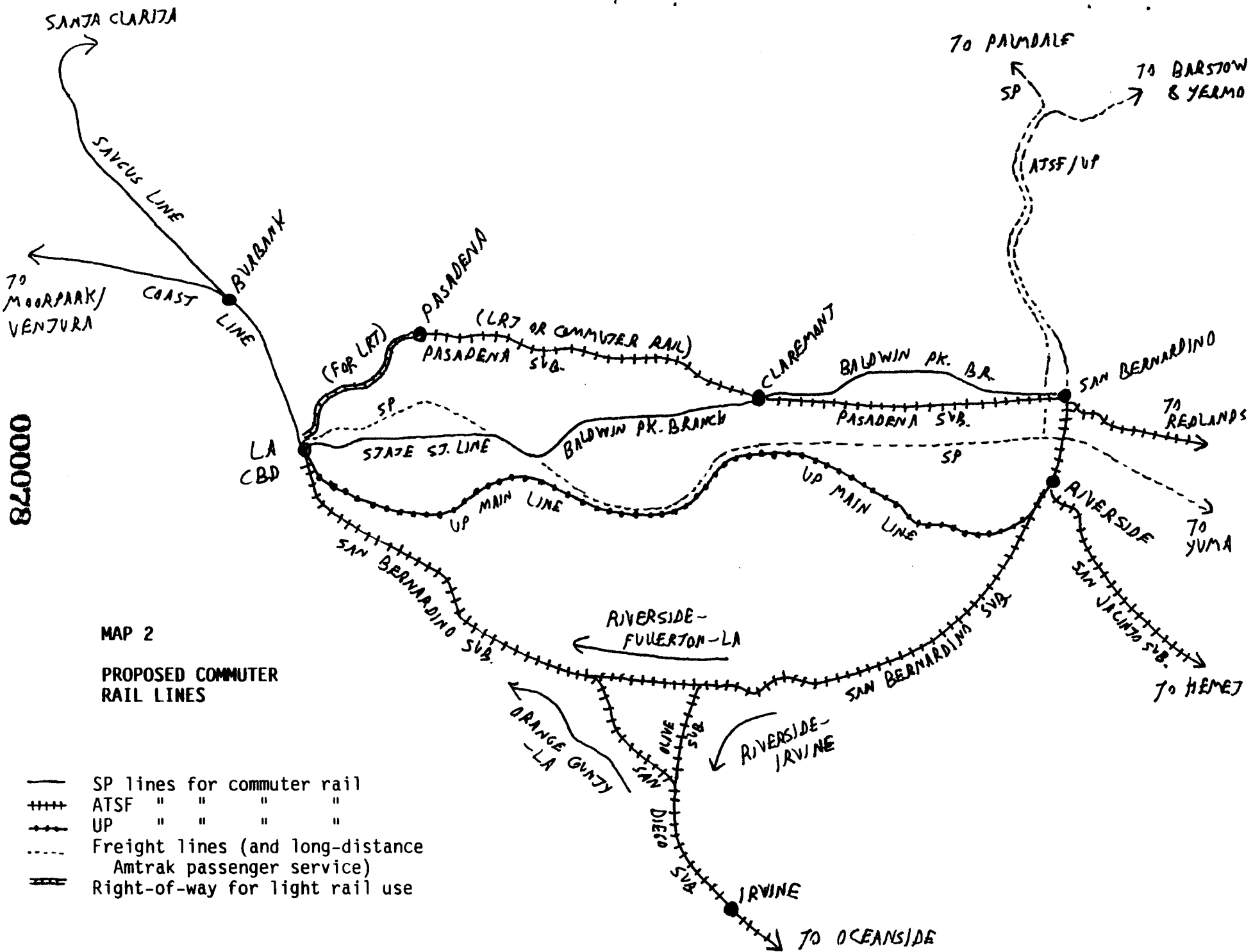
By 1994, the lines most heavily-used for freight will be the ATSF San Bernardino Subdivision, with 22 trains; the SP Alhambra and Yuma Lines, with 18 trains; and the UP Second Subdivision, with 14 trains (SCRRA, Estimate of Daily Train Volumes, 1994). The Palmdale cut-off will probably carry about 10 trains (SCAG tabulation from PUC data). On the basis of train volumes, these lines appear to be the best candidates for electrification. The Alameda Corridor, which will eventually carry over 70 trains per day (Ports Access Study, 1984) would of course be electrified assuming that the main lines of the three railroads that will use it--the SP, ATSF, and UP--will be electrified.

As noted above, the ATSF and UP main lines, and the SP Palmdale Line, are subject to steep gradients in the Cajon Pass, which further strengthens the case for electrification of these lines.

The Saugus Line is projected to carry six and the Coast Line only two long-haul freight trains. Historically, the Coast Line has seen heavier freight traffic, and there is a possibility that additional freights will be shifted to this line once again. Although these two lines remain candidates for rail freight electrification, they are lower on a priority list than the lines mentioned previously, on the basis of train volumes.

The Pasadena Subdivision of the Santa Fe, which operates between San Bernardino and Los Angeles via the San Gabriel Valley, is projected to carry seven freight trains, assuming a status-quo ownership situation. However, the County Transportation Commissions are currently negotiating with the ATSF to acquire this freight line for light rail and commuter train use. Assuming that this line is purchased by public agencies, these trains would be diverted southward to the ATSF San Bernardino Subdivision (via Fullerton), and there would be no through freights on the Pasadena line: after public acquisition there will remain one local freight round trip on the line east of Irwindale. For these reasons, the Pasadena Subdivision is not considered a candidate for rail freight electrification.

The San Diego Subdivision, which extends from Fullerton down the Coast to San Diego County, is expected to carry only four through freights. Although it is heavily-used by passenger trains on the Lossan Corridor, it has not been considered a candidate for electrification on the basis of freight volumes.



MAP 2
 PROPOSED COMMUTER
 RAIL LINES

- SP lines for commuter rail
- ++++ ATSF " " " "
- UP " " " "
- Freight lines (and long-distance Amtrak passenger service)
- |||| Right-of-way for light rail use

Intercity Passenger Train Service

Passenger trains are relatively light (requiring fewer locomotives than freights), and by comparison produce much less pollution per train mile. Of the railroad lines discussed above, the Santa Fe San Diego Subdivision has the highest frequency of passenger service today, and by 1994, 20 San Diegan intercity trains are planned to be in operation. The Coast Line currently has four San Diegan trains (running to Santa Barbara) two daily long-distance Amtrak passenger trains. By 1994, 12 intercity trains are forecast for this corridor.

The SP Saugus and Alhambra/Yuma Lines and Santa Fe San Bernardino and Pasadena Subdivisions carry two long-distance passenger trains each. However, in the event that the Pasadena Subdivision is sold to public agencies, its intercity trains will be diverted to the San Bernardino Subdivision.

Planned Commuter Rail Service

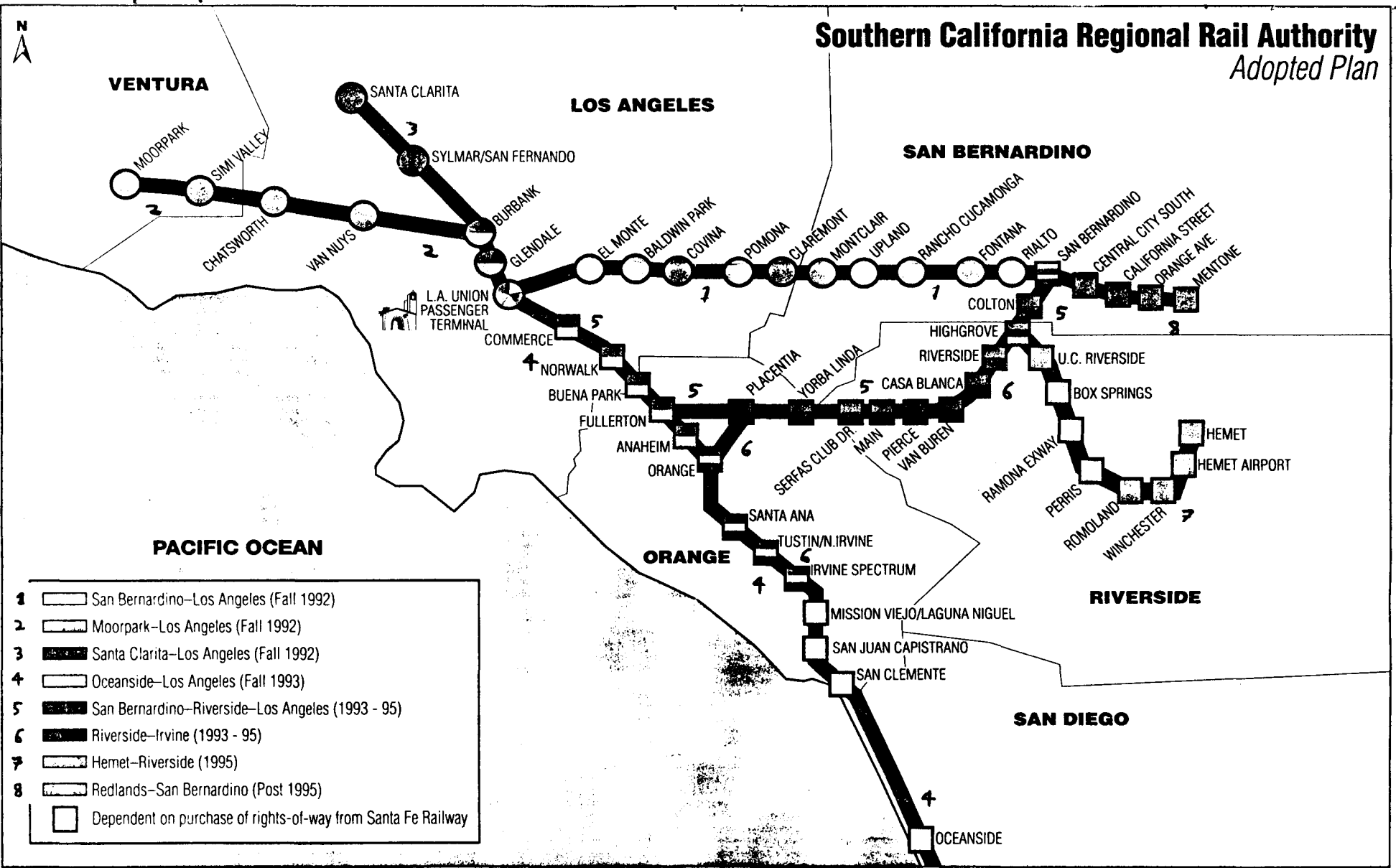
Commuter trains are, like intercity passenger trains, relatively light in weight, and usually only require a single locomotive for propulsion. Although they make more frequent stops than freight trains, they produce considerably lower emissions than long-haul, heavy tonnage freights.

At present there is only a single commuter round trip (two trains) operating from Los Angeles to Orange County on the Santa Fe San Bernardino Subdivision to Fullerton, thence south on the ATSF San Diego Subdivision.

A major expansion of commuter rail service in the SCAG region is planned by the Southern California Regional Rail Authority (Maps 2,3). These are, in order of descending priority:

- o LA to Moorpark on the SP Coast Line (1992); eventually to be extended to Ventura (SP Line SCRRRA has operating rights and easements).
- o LA to Santa Clarita on the SP Saugus Line (1992--uses the Coast line from downtown LA to Burbank Junction) (SP Line SCRRRA has operating rights and easements).
- o LA to San Bernardino on a combination of the SP State Street Line and the SP Baldwin Park Branch (1992) (SP Line SCRRRA purchase of line).
- o An expansion of the service from LA to Orange County on the ATSF San Bernardino and San Diego Subdivisions, and extension of the service to Oceanside (1993) ATSF Line under negotiation as to status).
- o LA to Riverside on the UP Second Subdivision (1994) (UP Line SCRRRA has operating rights, easements and ownership of partial segments).
- o San Bernardino/Riverside to Irvine on the ATSF San Bernardino, Olive, and San Diego Subdivisions (1995) (ATSF Line under

Southern California Regional Rail Authority Adopted Plan



AUGUST 1991

MAP 3

COMMUNITIES SERVED BY THE REGIONAL COMMUTER RAIL SYSTEM

Does not include commuter rail on the Union Pacific main line (see Map 2)

negotiations as to status).

- o LA to Riverside on the ATSF San Bernardino Subdivision (1995) (ATSF Line under negotiations as to status).
- o Hemet to Riverside over the ATSF San Jacinto Subdivision, possibly extending west to LA (1995) (ATSF Line under negotiations as to status).
- o Redlands to San Bernardino over the ATSF Redlands Subdivision, possibly continuing west to LA (may be implemented after 1995) (ATSF Line under negotiation as to status).

By 1994, the following train commuter train volumes are expected by line: 16 trains to Ventura County, on the SP Coast Line; eight trains to Santa Clarita over the SP Coast and Saugus Lines; 28 trains on the SP State Street Line/Baldwin park Branch; 10 trains over the Union Pacific main line; and 16 trains from LA to Orange County via the San Bernardino and San Diego Subdivisions (SCRRA, Estimate of Daily Train Volumes, 1994).

Tables 1 and 2 compare commuter and intercity passenger rail and freight volumes for the SP Coast, Saugus, Alhambra, Yuma, and State Street Lines and the Baldwin Park Branch, as well as the UP main line and the Santa Fe San Bernardino, San Diego, and Pasadena Subdivisions (SCRRA data). It is indicated that of the 451 locomotives estimated to be operating over these lines in 1994, 279 would be freight engines, 122 locomotives used for commuter rail, and 50 for intercity passenger service.

Diesel-Electric and Electric Locomotives

The primary difference between diesel-electric and electric locomotives is that diesel locomotives carry an on-board diesel generator to make electricity to power electric traction motors on the driving wheels. Electric locomotives pickup power carried through overhead wires (or third rails) and put that line voltage through an on-board transformer and rectifier, thence to the traction motors (Figure 1).

Locomotive Emissions

Emissions for Diesel-electric locomotives come from the diesel engine and are affected by the loading on the diesel engine necessary to generate electricity. Higher throttle settings put out higher voltage and amperage as more horsepower is needed. Train weight, length, track curvature, gradient, and wind resistance affect the need for horsepower. Electric locomotive emissions come from the generation of electrical power at stationary sources.

The primary emissions problem from diesel locomotives comes from Oxides of Nitrogen (NOx) which result from combustion or compression at high temperatures and particulates. These emissions are also a major problem for diesel trucks and autos. Emissions of hydrocarbons and carbon monoxides are relatively insignificant from this source.

TABLE 1

ESTIMATE OF DAILY TRAIN VOLUMES (1994)

	COMMUTER*	INTERCITY*	FREIGHT*	TOTAL*
Coast Line	24 (1)	10 (1)	2 (3)	38
Saugus Line	8 (1)	2 (2)	6 (4)	16
Pasadena Subdivision	0	2 (2)	7 (3)	9
State Street/Baldwin Park	28 (1)	0	0	28
Alhambra/Yuma Line	0	2 (2)	18 (4)	20
Union Pacific Line	10 (1)	0	14 (4)	24
San Bernardino Sub.	36 (1)	2 (2)	22 (4)	60
San Diego Sub.	16 (1)	20 (1)	4 (3)	40
	<u>122</u>	<u>40</u>	<u>73</u>	<u>235</u>
	<u><u>122</u></u>	<u><u>40</u></u>	<u><u>73</u></u>	<u><u>235</u></u>

*Trains (Locomotives/Train)

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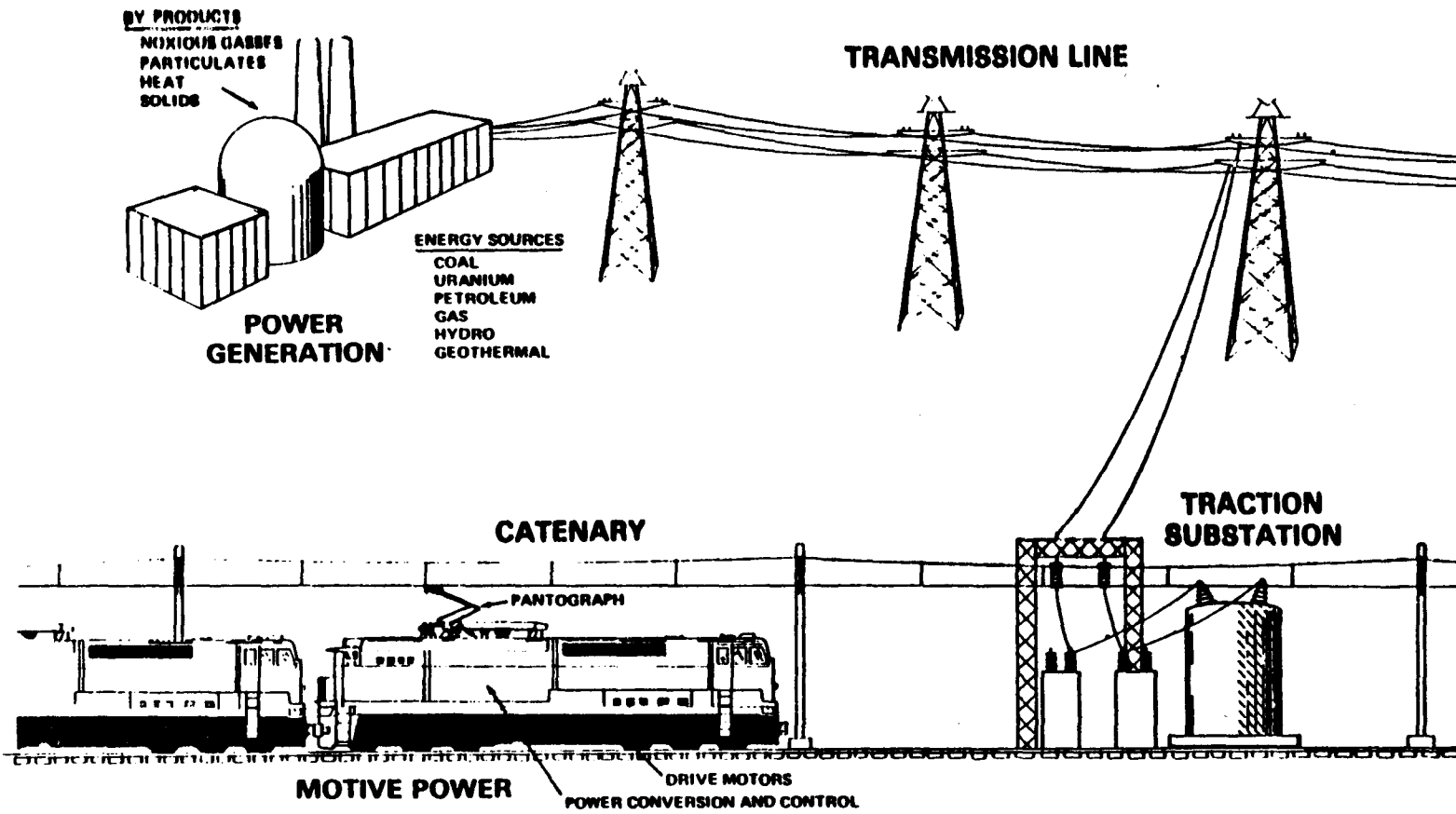
TABLE 2

ESTIMATE OF DAILY LOCOMOTIVES OPERATED (1994)

	COMMUTER	INTERCITY	FREIGHT	TOTAL
Coast Line	24	14	6	44
Saugus Line	8	4	24	36
Pasadena Subdivision	0	4	21	25
State Street/Baldwin Park	28	0	0	28
Alhambra/Yuma Line	0	4	72	76
Union Pacific Line	10	0	56	66
San Bernardino Sub.	36	4	88	128
San Diego Sub.	16	20	12	48
	<u>122</u>	<u>50</u>	<u>279</u>	<u>451</u>
	<u><u>122</u></u>	<u><u>50</u></u>	<u><u>279</u></u>	<u><u>451</u></u>

000083

FIGURE 1



000084

COMPONENTS OF AN ELECTRIFIED RAIL SYSTEM

Freight Train and Commuter Train Operating Conditions

Diesel locomotive fuel consumption and resultant emissions are strongly affected by operating conditions such as train weight, train length, gradient, track curvature, and available horsepower. Operating conditions for freight and commuter rail operations in Southern California are identified below for comparison and shown in Table 3.

- o Freight Trains operate at relatively high tonnage (4,000 to 10,000 tons per train),
- o Commuter trains operate at very low tonnages (400 to 800 tons)
- o Freight trains are long (3,000 to 9,000 feet)
- o Commuter trains are short (400 to 800 feet)
- o Freight trains operate on long distance runs (Chicago, St. Louis, Houston, El Paso, New Orleans, Salt Lake City, Sacramento, etc.).
- o Commuter trains operate on short distance runs (LA-Moorpark, LA-San Bernardino, LA Saugus)
- o Freight trains often operate on significant gradients, especially in hilly country or in the mountains (Beaumont Grade 2.9%, Cajon Pass 3.1%, Chatsworth-Simi 2.1%, etc.)
- o Commuter trains operate in the urbanized areas in less severe gradient conditions (1%, rarely exceeding 2%)
- o Freight trains operate at at a low horsepower per ton ratio (2.5 to 4.5), with multiple locomotives (3 to 6 3,000 horsepower units)
- o Commuter trains operate at a high horsepower per ton ratio (4.5 to 12 horsepower per ton), with single locomotives (3,000 horsepower)
- o Freight trains operate at high throttle settings (long periods of running at maximum "notch" 8 throttle levels) which produce the highest levels of NOx emissions
- o Commuter trains rarely operate in continuous high throttle settings, with considerable operation cruising or decelerating which produce much less NOx emissions

Table 3

FACTS ABOUT DIESEL AND ELECTRIC LOCOMOTIVES

	<u>FREIGHT</u>	<u>COMMUTER</u>
Tonnage	4,000 - 10,000 tons/train	400 - 800 tons/train
Length	3,000 - 9,000 feet	400 - 800 feet
Service Area	Long Distance (Chicago, St. Louis, etc)	Short Distance (LA, San Bernardino 60 miles)
Gradients	2.1% (Simi Valley) - 3.1% (Cajon Pass)	1% - 2%
Horse Power	3 - 6 locomotive (3,000 horse power unit)	1 locomotive (3,000 horse power unit)
Horse Power/ Ton Ratio	Low @ 2.5 - 4.5	High @ 4.5 - 12
Emissions (1987)	30.9 tons/day	.7 tons/day
NOx Emissions	347 lbs. per day/per train	33.9 lbs. per day/per train

Current and Estimated Freight and Commuter Locomotive NOx Emissions 1987
Base Year*

Freight Emissions (Tons/day)

30.9

1993 Current Rail Passenger Emissions (Tons/day)

.7

Estimated Commuter Rail Emissions (Tons/day)

1.3 (Edison/Dennison Assoc. estimate)

.71 (SCAG RTIP estimate based upon Bay Area Commuter Service)

Further Comparison of Freight and Commuter Train Emissions

An Analysis of the Data presented in the California Air Resources Board Locomotive Emissions Study showed NOx emissions from freight train locomotives: 347 lbs. per day/per train.

A similar analysis of emissions from commuter operations in the San Francisco Bay Area showed NOx emissions from commuter train locomotives at 33.9 lbs. per day/per train.

* Data based upon California Air Resources Board Locomotives Emissions Study

SCAG AIR QUALITY MANAGEMENT PLAN MEASURE 14 ANALYSIS

Railroad electrification is Measure 14 in the 1989 Air Quality Management Plan (Appendix A), and calls for a 90% reduction in the emissions caused by railroad freight operations in the South Coast Air Basin by 2010.

1989 AQMP Emissions Inventory Growth Assumptions

The Emissions Inventory for the 1989 AQMP used 1985 as a base year for locomotive emissions and incorporated increases in the baseline due to projected increases in both freight and passenger rail operations. Increases in train operations were expected because of regional growth, import and export growth at the Ports of Los Angeles and Long Beach, and the introduction of new rail passenger services, including commuter rail services.

Primary emissions from trains (pulled by diesel locomotives) are: Hydrocarbons, also known as reactive organic gases (ROG), Carbon Monoxide (CO), Oxides of Nitrogen (NOx), Oxides of Sulfur (SOx), and particulates smaller than ten microns (PM).

Baseline 1985, Appendix III-A Train Emissions (Tons Per Day)

ROG	CO	NOx	SOx	PM
5.52	9.78	20.97	2.39	1.26

1989 AQMP Projected Year 2000 Train Emissions

ROG	CO	NOx	SO	PM
8.38	15.08	32.55	3.46	1.88

1989 AQMP Projected Year 2010 Train Emissions

ROG	CO	NOx	SOx	PM
9.92	17.95	38.80	4.24	2.24

Emission Reductions from Measure 14 of all relevant line haul railroad operations would result in a ninety percent reduction of the projected 2010 inventory, upon full implementation.

The release of the California Air Resources Board, Locomotive Emission Study, prepared by Booz Allen & Hamilton, 1991, has identified a higher NOx baseline inventory (1987) than was contained in the 1985 AQMP Baseline. This study does indicate that other emissions, in particular CO and ROG, were significantly lower than earlier estimates.

SCAG RTIP Air Quality Management Plan Conformity Finding

SCAG analyzed emissions from commuter rail locomotives in the preparation of the 1991-1997 Regional Transportation Improvement Program (RTIP), in

order to do the required Clean Air Act conformity finding. Our analysis indicates that implementation this program will result in a net reduction in all criteria pollutants.

Input from the 1989 AQMP Measure 14 Railroad Electrification, including the 1985 Emissions Inventory for the South Coast Air Basin, and future emission inventories for years 2000 and 2010, which were prepared by the SCAQMD, were the basis for these calculations. SCAG based its specific analysis of the impacts of commuter rail emissions on the findings of the Locomotive Emission Study, for the California Air Resources Board, prepared by Booz Allen & Hamilton, which included more refined estimates of passenger rail emission impacts for various levels of service statewide.

SCAG staff, for estimation purposes in the Conformity Finding of the Regional Transportation Improvement Program (RTIP), used an estimate of .7 tons per day of NO_x, based upon a comparison of proposed commuter rail services with emission estimates of actual operating commuter rail service in the Bay Area (44 trains per day, with significantly older and dirtier locomotives, but easier gradient conditions).

RAILROAD ELECTRIFICATION MEASURE DESCRIPTION AND SCHEDULE

1989 Measure Description and Schedule:

The March, 1989 AQMP assumed that 90% of rail lines in the South Coast Air Basin would be electrified. None of the emission reductions were assumed to occur by Jan. 1, 1994. A pilot project was to be constructed by the railroads from 1996 to 1998, with electrification to be expanded to other lines from 1999 to 2010.

This schedule required SCAG and the SCAQMD to conduct a detailed feasibility study of railroad electrification during 1991-1992, and the railroads to conduct and obtain engineering studies, environmental clearance, and financing for the pilot project from 1993 to 1995.

1991 Measure Description and Schedule:

The 1991 AQMP revision still calls for 90% of rail freight operations to be electrified by 2010, including railroad main lines, and the Alameda Corridor, totalling approximately 571 route miles in the South Coast Air Basin. 17% of the emissions reduction is assumed to occur by 2000.

This schedule requires that a detailed feasibility study of railroad electrification be conducted by 1995. The feasibility study is to include specific consideration of commuter rail electrification.

Reasons for Schedule Changes:

- o The schedule for the electrification study was moved back, because the scope and scale of this type of control strategy requires extensive analysis on prioritization, future operational needs, design issues, costs, and financing.
- o The 1989 AQMP schedule would have required a detailed feasibility study to be completed in 1991-2. An electrification element is included in SCAG's FY 91/92 Overall Work Program. While SCAG has applied for funding to conduct such a study, no funds have been made available to date.

Major Railroad Electrification Issues

- o Electrification is capital-intensive, and requires a substantial investment up front. It does provide potential opportunities for operations and maintenance savings in the long term. Factors favorable to electrification are higher frequencies of trains, heavy tonnage trains, hilly terrain, and levels of train traffic. Future trends and potential benefits need to be assessed in prioritization of candidate routes for electrification.
- o Railroads have long been interested in electrification, but have not thus far been able to justify it financially as it would may take at least 20 years for such projects to pay for themselves, i.e. for the reduced O & M costs to compensate for the higher capital

requirement.

- o Most of the freight and passenger railroads which have been electrified elsewhere in the world are nationalized carriers. In the absence of governmental financial support for electrification in this country, it has not proceeded on corporate initiative to date, issues concerning national policy in this regard need to be examined.
- o The railroads view electrification as a solution for moving long, heavy-tonnage freight trains over long distances (e.g., between Los Angeles and Texas or Illinois) and issues of national policy need to be addressed, as this would require a very substantial capital investment.
- o Overall impacts on railroad operating and maintenance costs, and for service reliability would need to be determined. Time and reliability are especially important for fast intermodal trains, which are competing with long-haul trucking and impacts on freight railroad competitiveness need to be addressed, as there could be adverse air quality impacts if delays result in shifts to trucking in the region.
- o Current railroad signalling systems, grade crossing circuitry, and communications systems may need to be substantially modified or rebuilt to accommodate high-voltage AC electrification.
- o There are highway overpasses which may need to be modified to increase the vertical clearance over electrified lines. The cost of modifying grade separations would need to be determined.
- o An estimation of electric power availability for railroad electrification needs must be made and the best method of tying in railroad electrification with the utility grid would also need to be determined.
- o Main line consolidation could reduce electrification costs; however, this would entail extensive negotiations between the rail carriers to determine trackage rights and trackage fees. The consolidation issue should be determined before embarking on a program of electrification.
- o Intercity passenger trains and commuter trains operate over some of the main lines, this could be the basis for potential cost sharing of electrification facilities between the public and private sector. This would require extensive analysis in consultation with the freight carriers.
- o Participation by the utilities in providing electrification infrastructure could improve the financial feasibility of electrification, but the details of how the utilities would participate (construct and maintain substations, feeders, and overhead catenary, or only the substations) would need to be worked out.

Plans for Railroad Electrification by Other Transportation Planning/ Operating Agencies and by the Railroad Industry

The Alameda Corridor Transportation Agency (ACTA) is planning for eventual rail freight electrification along Alameda Street from downtown LA to the Ports of Los Angeles and Long Beach, including designing all grade separations (overcrossings and undercrossings) to provide extra clearance.

The Southern Pacific Transportation Co. states that it has a master plan for electrification of its lines. The points at which crew changes are currently made, and where presumably diesels would be exchanged for electric locomotives, are Yuma Az. on the Yuma/Alhambra Lines; San Luis Obispo on the Coast Line; and Bakersfield on the Saugus and connecting lines. The Santa Fe and Union Pacific do not have master plans per se, but have conducted internal electrification studies. The AT&SF would need to change engines at Barstow, while the UP would change engines at Yermo under an electrification scenario.

A consultant study for the Riverside County Transportation Commission determined that at the numbers of trains considered for the low and intermediate level service scenarios, electrification would be substantially more expensive than for an initial diesel operation (Riverside-Orange County Commuter Rail Study, Task 3 Report-Electrification Study, Morrison-Knudsen Engineers, Jan. 1991).

The number of commuter trains involved at the low level would be four round trips from Riverside to Orange County and two from Riverside to Los Angeles; at the intermediate level there would be eighteen round trips in total. Basic diesel commuter rail capital costs (track, signalling, stations, and rolling stock) would be \$ 129 million for the low level, and \$ 280 million at the intermediate level. Electrification would add about \$ 153 million to capital costs for the low level, and \$ 428 million for the intermediate level.

CALIFORNIA TRANSPORTATION COMMISSION ELECTRIFICATION WORKSHOP

The California Transportation Commission held a Workshop on Rail and Transit Electrification on August 20, 1991, at which representatives of utilities, air quality agencies, regulatory agencies, Caltrans, and the Southern California Regional Rail Authority (SCRRA) presented information on issues concerning railroad electrification. Concerns were expressed on the merits of operating diesel-electric locomotives to power proposed commuter rail services in the Southern California region due to a concern over increased emissions of Oxides of Nitrogen (NOx).

Following the August 20 Workshop the SCRRA agreed to do a comprehensive study of railroad electrification, both freight and commuter. A Scope of Work has been developed (Appendix B) and funding commitments are being solicited. The South Coast Air Quality Management District has already committed \$50,000 and in kind technical assistance to this study. A Resolution of the South Coast Air Quality Management District Board recommending that future allocation of Proposition 116 and other State funding for Commuter Rail by California Transportation Commission be

consistent with the 1991 AQMP, California Clean Air Act, and other federal air quality requirements was declared on October 4, 1991 (Appendix C).

CONCLUSION

The issues raised regarding emissions from diesel rail operations, including both freight and passenger service, will require a detailed analysis. Measure 14, Railroad Electrification, in the 1989 and 1991 Air Quality Management Plans, recognizes the complexity of this issue and calls for a comprehensive study as a prelude to implementation.

The study would consider the impact of electrification on railroad operations for the Southern Pacific, Santa Fe, and Union Pacific, including long-distance/ transcontinental freight operations. It would also consider commuter rail and intercity passenger rail electrification within the South Coast Air Basin.

In addition to addressing the technical, financial, and institutional issues outlined above--which have caused the schedule for implementation of Measure 14 to be moved back, the study would need to determine ton-miles of freight moved in existing freight trains, and projected through the year 2010 (including increases due to port traffic). It would also need to examine emissions impacts of different classes of trains and of train operations on lines with different levels of traffic, including both passenger and freight trains.

Early implementation of rail electrification, on an accelerated schedule beyond that called for in the 1989 AQMP and 1991 revised AQMP, would not be warranted based solely on the emissions from commuter rail service, as presently planned. SCAG's RTIP Conformity analysis does not indicate any short term air quality problems due to commuter rail implementation on the current schedule. SCAG would, therefore, support expeditious implementation of the commuter rail program as planned in the Regional Mobility Plan while pursuing an accelerated Railroad Electrification planning and programming which would result in earlier implementation of 1991 AQMP Measure 14 "Railroad Electrification".

APPENDIX A

000094





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Palm Desert

***ALTERNATES**

Imperial County • Sam Sharp, *Supervisor* • Los Angeles County • Ed Edelman, *Supervisor* and Kenneth Hahn, *Supervisor* • Orange County • Gaddi Vasquez, *Supervisor* • Riverside County • Patricia Larson, *Supervisor* • San Bernardino County • Larry Walker, *Supervisor* • Ventura County • Vicky Howard, *Supervisor* • Cities of Imperial County • Victor Sanchez, Jr., *Mayor, Westminster* • Cities of Los Angeles County • Abbe Land, *Councilmember, West Hollywood* • Cities of Orange County • Ruthelyn Plummer, *Councilmember, Newport Beach* • Cities of Riverside County • (Vacant) • Cities of San Bernardino County • Elmer Digneo, *Mayor Pro Tem, Loma Linda* • Cities of Ventura County • (Vacant) • City of Los Angeles • Richard Alatorre, *Councilmember* • Rita Walters, *Councilmember* • Michael Woo, *Councilmember* • Long Beach 2nd position • Jeffrey Kelloff, *Vice Mayor* • At Large • Kathy Salazar, *Mayor Pro Tem, Montebello* • Fred Aguilar, *Mayor, Chino* • Robert Lewis, *Mayor Pro Tem, Thousand Oaks*

October 18, 1991

Hon. William Leonard, Chairman
California Transportation Commission
1120 N Street
Sacramento, CA 95814

Dear Mr. Leonard:

As the Regional Transportation Planning Agency and the M.P.O. for the region which includes South Coast Air Basin, SCAG wrote the comprehensive Railroad Electrification Control Measure, both for passenger and freight railroads in the 1989 and 1991 South Coast Air Quality Management Plans. The measure is designed to achieve the 90% reduction (by 2010) in pollutants, phased in a cost effective and environmentally effective manner. The tonnage reductions associated with this measure come predominantly from the operations of freight locomotives. The measure also called for a comprehensive study to determine a specific priority schedule for implementation.

SCAG is supportive of early implementation of the commuter rail service as is called for in the transit component of the Regional Mobility Plan and the 1989 and 1991 South Coast Air Quality Management Plans, using diesel locomotives in the interim, to reduce automobile related pollution. This measure was developed as part of a Regional Mobility Plan that is the basis for the adopted Air Quality Management Plan, and that has been found in September 1991, to be a conforming RTP under EPA requirements.

As we noted in our testimony at your workshop on August 25th and our letter of September 9, 1991, to you, SCAG has determined the conformity of the 1991/1997 Regional Transportation Improvement Program under the Federal Clean Air Act. This RTIP includes the completion of the five commuter rail lines you now have under discussion. This conformity analysis, including the regional emissions analysis, was done under the EPA Interim Conformity Requirements.

Hon. William Leonard, Chairman
California Transportation Commission
October 18, 1991
Page Two

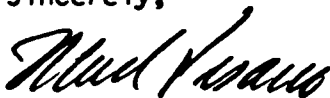
It is our concern that delay in implementation of commuter rail services will result in a failure to expeditiously implement Transportation Control Measures required in the State Implementation Plan under the Federal Clean Air Act. This could result in jeopardizing federal funding of other important transportation projects.

SCAG looks forward to participation in the railroad electrification study called for in the AQMP measure and commends the Southern California Regional Rail Authority for accelerating the study schedule. SCAG looks forward to incorporating the findings of the study into the upcoming revision of the Regional Mobility Element of the Regional Comprehensive Plan and our revisions to the 1992 Air Plan.

We would urge that special attention be taken with the scope of work for the study to specifically address the institutional responsibilities for the implementation of the electrification recommendations. We believe there are substantial legal issues involved over who can do what in regard to railroad electrification and what legally enforceable mechanisms can require implementation of railroad electrification.

SCAG would urge the Commission to support the comprehensive railroad electrification study and the expeditious implementation of diesel powered commuter rail service in the interim.

Sincerely,



MARK PISANO
Executive Director

MP:by:rhh

bcc: Bruce Nestande

000096



APPENDIX B



Resolution 91- 37

A Resolution of the South Coast Air Quality Management District Board recommending that future allocation of Proposition 116 and other State funding for commuter rail by California Transportation Commission be consistent with the 1991 AQMP, California Clean Air Act, and other federal air quality requirements.

WHEREAS, the South Coast Air Quality Management District Board is committed to achieve healthful air in the South Coast Air Basin and other parts of the District at the earliest possible date; and

WHEREAS, the South Coast Air Quality Management District adopted on July 12, 1991 an Air Quality Management Plan for meeting federal and state air quality requirements; and

WHEREAS, the South Coast Air Quality Management District Air Quality Management Plan includes a control measure requiring the electrification of 15% of all rail operations in the Basin by the year 2000, and the electrification of 90% of all rail operations by the year 2010; and

WHEREAS, the Southern California Regional Rail Authority and the Los Angeles County Transportation Commission are in the process of buying up to 32 diesel locomotives to start commuter rail service on eight proposed commuter routes in the Basin; and

WHEREAS, the initial analysis for the electrification of rail represents a cost per ton for emission reductions that is less than comparable NO_x reductions required from power plants and refineries; and

WHEREAS, the Air Quality Management Plan calls for all sources to do their fair share to reduce emissions in order for this region to attain clean air; and

WHEREAS, the South Coast Air Quality Management District Board believes that a regional system of diesel commuter trains is not consistent with the Air Quality Management Plan, the California Clean Air Act, or Federal Clean Air Act requirements; and

WHEREAS, it is the obligation of all units of government, including state, regional, and local transportation commissions, to seek to attain the federal and state ambient air quality standards at the earliest possible date; and

WHEREAS, the South Coast Air Quality District Board recognizes that, in order to phase in commuter rail service by Fall 1992, the use of a few diesel locomotives is needed on the initial three routes proposed by Southern California Regional Rail Authority;

NOW, THEREFORE, BE IT RESOLVED, that the South Coast Air Quality Management District Board declares its support for the early electrification of all commuter and freight rail in the Basin;

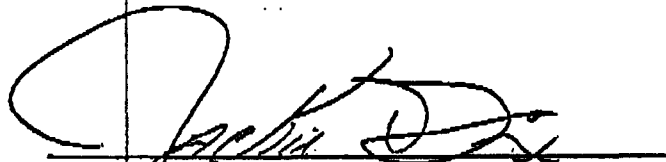
BE IT FURTHER RESOLVED that the South Coast Air Quality Management District Board believes that using Proposition 116 and 108 funds, or any other state funding for diesel commuter rail beyond these initial three routes would not be consistent with the 1991 Air Quality Management Plan or federal and state air quality requirements; and

BE IT FURTHER RESOLVED that the South Coast Air Quality Management District Board recommends that a legally-enforceable mechanism be established to ensure the early phase-out of diesel locomotives on the initial three routes prior to allocation of Proposition 116 and 108 funds; and

BE IT FURTHER RESOLVED that the South Coast Air Quality management District Board recommends that California Transportation Commission not fund or allocate any funds for the purchase of diesel locomotives beyond those required for the three start-up routes; and

BE IT FURTHER RESOLVED that the South Coast Air Quality Management District Board directs the Executive Officer to work with California Transportation Commission, Southern California Regional Rail Authority, Los Angeles County Transportation Commission, Southern California Association of Governments, and others, to study and develop a recommendation no later than January 15, 1992 for the earliest possible electrification of all commuter rail routes, including the expeditious conversion of the initial three routes to electric.

Dated: October 4, 1991



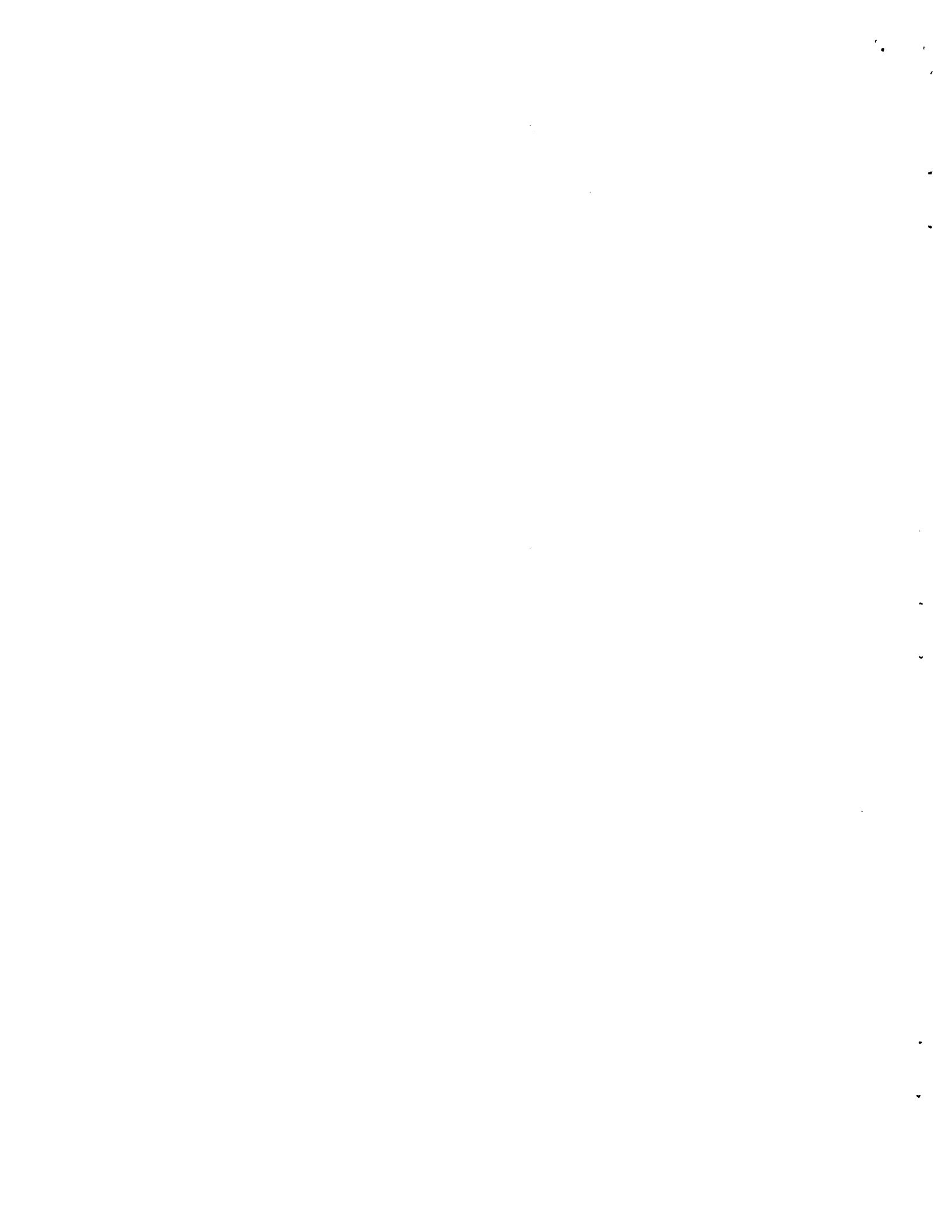
JACKIE DIX, Clerk of the Board

AYES: Beswick, Braude, Morgan, Schiller, Wieder, Wilson,
Wedaa, and Younglove

NOES: Albright, Antonovlch and Mkelis

ABSENT: Berg

APPENDIX C



Electrification Task Force

B. Nestande
CHAIR

Technical Committee

N. Jester

Consultants

Finance & Administration Committee

S. Greene

Planning
Engineering &
Analysis

Operations
and
Maintenance

Financial

Environmental

Regulatory
Agency
Requirements

000102



SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

RESOLUTION 91-2

OF THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ON THE ELECTRIFICATION OF COMMUTER RAIL LINES.

WHEREAS, the overall purpose of the Southern California Regional Rail Authority is to advance the planning, design, construction, and then to administer the operation of regional passenger rail lines serving the counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura; and

WHEREAS, the Southern California Regional Rail Authority has prepared in response to Article 10, Chapter 4 of Division 12 of the Public Utilities Code (SB 1402 of 1990, Presley) and adopted the Southern California Commuter Rail 1991 Regional System Plan detailing the plan and implementation schedule for commuter rail in Southern California; and

WHEREAS, the adopted Regional Mobility Plan identifies commuter rail service as an important component in addressing regional congestion relief, and the adopted Air Quality Management Plan identifies rail electrification as an action requiring a comprehensive planning study to address a broad range of implementation issues; and

WHEREAS, this plan is being implemented on schedule to meet the critical travel needs of Southern California commuters; and

WHEREAS, the diesel locomotives already purchased by the Southern California Regional Rail Authority are fuel-efficient, low-emission units which produce 1/15th of the air pollutants produced by the combined auto emissions of the automobiles displaced by the commuter rail service, reflecting the Authority's commitment to air quality in the Los Angeles urbanized area.

NOW THEREFORE BE IT RESOLVED that:

1. The Southern California Regional Rail Authority is committed to the introduction of alternative energy sources, including electrification, on its passenger rail lines as is justified so long as the implementation schedule committed in the 1991 Regional System Plan is not negatively affected; and

2. The Southern California Regional Rail Authority believes decisions related to railroad electrification must be made comprehensively considering freight and intercity rail operations as well as commuter rail services.

RESOLUTION 91-2

3. The Southern California Regional Rail Authority welcomes the offer of the Southern California Edison Company to electrify passenger rail lines at Southern California Edison's costs distributed over all its rate payers, the cost of electrification to include all associated costs such as the overhead catenary distribution systems and substations, the necessary signal system changes, and the net cost of re-equipping the locomotive fleet with electrical units.

4. The Southern California Regional Rail Authority believes that given the critical regional mobility needs of Southern California it is best to start commuter rail services with state-of-the-art diesel locomotives, to transition at the appropriate time to alternative fuel locomotives, and to implement an electrification program of railroad lines as a final step; and

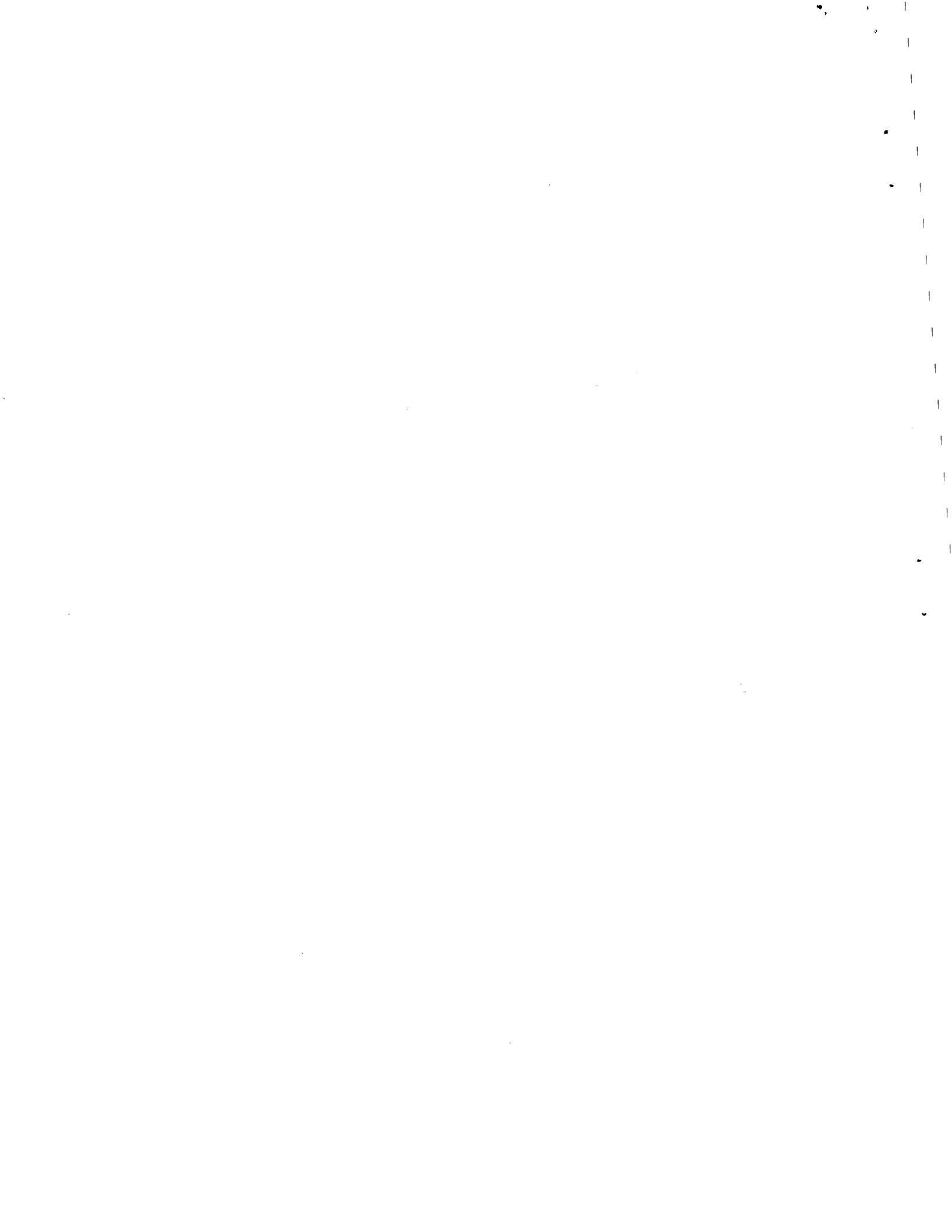
5. The Southern California Regional Rail Authority agrees to participate in any comprehensive review of railroad electrification involving all interested agencies to achieve feasible and fundable railroad electrification.

Chairman

Date

000104

APPENDIX D



14. RAILROAD ELECTRIFICATION

=====

SUMMARY

SOURCE CATEGORY: Trains

CONTROL METHODS: Tier II

U.S Environmental Protection Agency (EPA) and Federal Railroad Administration (FRA) to conduct a detailed feasibility study of railroad electrification by December 31, 1995.

Consistent with EPA direction, FRA requires by December 31, 2010, the installation of overhead and/or third rail electrical distribution systems on heavily-used rail lines. Ninety percent of all rail freight operations would be electrified.

IMPLEMENTING AGENCIES: EPA, FRA

IMPLEMENTATION

ASSUMPTIONS: Electrification of 90% of rail operations in the basin, including railroad main lines, and the Alameda Corridor from downtown to the ports, totalling approximately 571 route miles in the South Coast Air Basin (SCAB).

It is assumed that the extent to which this measure will be effective by 2000 and 2010 will be 17% and 100% respectively.

PRIMARY BENEFIT:

Tier II

Approximately 0.20 tons/day ROG reduction by 2000.
Approximately 1 ton/day ROG reduction by 2010. These figures will be refined after completion of the detailed electrification study.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Electrification of high traffic density railroad lines will significantly reduce emissions from railroad operations in the South Coast Air Basin, provided the added power generation necessary comes from out of basin sources. All railroad locomotives currently in operation in the basin are diesel-electric. A large diesel engine drives a generator which provides

electricity for the operation of traction motors mounted on the locomotive wheels providing propulsion. The operation of large diesel engines found on locomotives is a significant source of NOx emissions in the SCAB.

There are three Class I railroads operating in the basin: the Union Pacific Railroad, the Southern Pacific Transportation Company, and the Atchison, Topeka and Santa Fe Railway. There are also two Class II railroads that provide local switching service: the Los Angeles Junction Railway which operates in the cities of Vernon and Maywood, and the Harbor Belt Line, which operates in the Port of Los Angeles. In addition to these freight railroad companies, Amtrak, the regional line haul passenger operator, provides service over the tracks of the Class I railroads.

The Class I railroads carry out both line haul and local switching operations in the basin. Line haul service consists of long freight trains operating between major classification and intermodal terminals. Local switching operations involve shorter trains serving customers on both branch lines and main lines. The predominate mode of operation in the basin, however, is line haul.

All urban rail transit projects (light rail and rapid transit) currently being built in the basin are electrified, using overhead or third rail distribution systems. Whereas current plans for the first phase of regional commuter rail development in the SCAG region have assumed diesel power, a detailed evaluation of electrification has been developed in conjunction with the riverside-orange county commuter rail study.

Electrification has been used extensively throughout the world for all types of rail operations and is a successful, proven technology. Europe and Japan operate most major line haul operations under electric power with no emissions from the vehicle.

In the United States, railroad electrification began in 1895, when the Baltimore and Ohio Railroad began operating three 1400 horsepower locomotives on a four-mile line through a series of tunnels in Baltimore. These units were used to shuttle trains with steam locomotives through the tunnels. Until 1910, smoke abatement from steam locomotives continued to be the major advantage of electrification.

Between 1910 and 1925 the New Haven and Pennsylvania Railroads developed electrified systems in the congested, high-density territory adjacent to the New York metropolitan area.

Over the last 30 years, however, diesel-electric operations have replaced all electrified operations in freight service, except for a few lines serving electric utilities.

Regulatory History

Section 40702 of the Health and Safety Code specifies that no order, rule, or regulation of any district shall specify the design of equipment, type of construction, or particular method to be used in reducing the release of

000106

air contaminants from railroad locomotives.

Despite the state code, the 1979 and 1982 AQMP's called for rail electrification. The 1979 Plan contained H11 Electrify Railroad Switching Yards. The measure called for replacing existing diesel railroad operations, if appropriate, with overhead electric systems. Electrification and/or other equivalent measures would be applied at the optimal scale of operation to achieve equivalent emission reductions.

The 1982 Plan Revision in M8 Electrification of Railroad Line Haul Operations called for reduction of emissions associated with railroad line haul operations by replacing existing diesel locomotive operations with electrified systems.

CONTROL METHODS

The proposed method of control is to install overhead and/or third rail electrical distribution systems and use electric power for propulsion of locomotives along the major line haul routes into and through the basin. The use of electric power would involve the purchase of new electric locomotives or the retrofit of existing diesel electric locomotives for dual use.

Initial capital costs would be substantial. As purely an Air Quality Measure cost effectiveness would not be high. However, significant long run cost savings can accrue from electrified rail operations.

Electrification would reduce railroad operating costs, and reduce overall fuel costs. Locomotive fleet requirements should be reduced, in that a 6,000 horsepower electric locomotive can do twice the work of a 3,000 horse-power diesel electric locomotive. The capital cost per horsepower has been estimated to be on par with diesel electric locomotives in the long run. Electric locomotives have greater reliability (mean time between failures is greater). Electric locomotives have longer lives (30-40 years) than diesel electrics (15-20 years).

Implementation would begin with EPA and FRA conducting a detailed feasibility study of railroad electrification by December 31, 1995. The study would lead to EPA direction and an FRA requirement that 90% of all rail operations in the SCAB be electrified by December 31, 2010.

Within the South Coast Air Basin, the primary lines for electrification would be the high density main lines plus the proposed consolidated rail corridor to the Ports of Los Angeles and Long Beach. Terminal, switching, and branch line operations would continue to use diesel-electric or alternate fuel locomotives.

The railroad lines that would be electrified would be the consolidated rail corridors serving the Ports of Los Angeles/Long Beach; primary east/west transcontinental routes of the Santa Fe, Southern Pacific, and Union Pacific Railroad, both in the basin and through the Cajon Pass and San Geronio Pass; primary north/south rail routes, of the same carriers, out

of the basin via the Cajon Pass, Saugus and Coast Routes.

The candidate lines include the following route miles in the SCAB:

Route:	Route miles:
Consolidated Harbor Line	21 miles
UP First Subdivision	3 miles
ATSF Third Subdivision	71 miles
ATSF First Subdivision	83 miles
UP Second Subdivision	59 miles
SP Alhambra Line	57 miles
SP Yuma Line	75 miles
SP Coast Line	66 miles
SP Saugus Line	69 miles
SP Palmdale Line	67 miles

The above total approximately 571 route miles in and around the SCAB.

MONITORING ISSUES

Maintain liason with the Rail Operators, ARB, EPA, and the SCAQMD and assess development of necessary feasibility studies, engineering studies, and financing studies until an effective implementation program involving a conversion timetable, construction schedule, and financing element is developed and put into action.

IMPLEMENTATION ISSUES

The capital costs of electrification pose a significant obstacle to the implementation of this control measure in the Los Angeles basin, even though substantial savings in operating costs can be projected over the long run. This control measure could pay for itself within twenty years through savings in operating costs. Funding for electrification could come from the sale of revenue bonds, but assistance from state or federal sources would certainly facilitate implementation of this control measure.

The Federal Clean Air Act may provide an increased impetus for rail electrification on a large scale through the ability to benefit as a potential offset for NOx emissions from other (stationary) electrical generating facilities.

EMISSIONS REDUCTION

Electrified railroad operations in the Basin would eliminate the need for line haul diesel operations entirely for the electrified main lines except in rare emergencies. Electrification would reduce railroad emissions in the Basin by 90%, as long as new power needed is generated outside the basin.

COST EFFECTIVENESS

Initial capital costs would be substantial. As purely an Air Quality Measure cost effectiveness would not be high. However, significant long

run cost savings can accrue from electrified rail operations.

Electrification would reduce railroad operating costs, and reduce overall fuel costs. Locomotive fleet requirements should be reduced, in that a 6,000 horsepower electric locomotive can do twice the work of a 3,000 horse-power diesel electric locomotive. The capital cost per horsepower has been estimated to be on par with diesel electric locomotives in the long run. Electric locomotives have greater reliability (mean time between failures is greater). Electric locomotives have longer lives (30-40 years) than diesel electrics (15-20 years).

LEGISLATIVE/RESEARCH NEEDS

A more detailed feasibility study of railroad electrification in the South Coast Air Basin should be conducted, including: whether main line rail consolidation would reduce overall costs of electrification (including operations); trade-offs between changing engines and developing new hybrid diesel-electric/electric locomotives; costs and benefits of electrifying entire lines (e.g. the SP from Los Angeles to El Paso) as opposed to only segments within the air basin; use of dual-voltage locomotives; the best method of tying in the electrification system with the utility grid; and potential for sharing costs with commuter rail and transit services (bus and rail), many of which may also be electrified.

The detailed feasibility study of railroad electrification will include specific consideration of commuter rail electrification. The proposed commuter services on the sp coast line (LA-Moorpark), the SP SAUGUS line (LA-Santa Clarita), and the ATSF third subdivision (LA-Oceanside, LA-Riverside, and San Bernardino-Irvine services) would operate over rail freight lines which are to be electrified. Electrification potential for the ATSF fourth and Olive subdivision lines (to be used by the LA-Oceanside and San Bernardino-Irvine Commute Services) and of the LA-San Bernardino commuter rail line (to operate over a combination of the SP State Street line, Baldwin Park branch, and ATSF second subdivision--which would have only minor levels of freight service) would be included in the same, comprehensive feasibility study.

Appropriate Federal legislation should be developed to allow trading of emission credits for stationary electrical generation facilities from mobile electrical generators (locomotives), if additional authority is needed.

A cooperative effort with the U.S. Department of Transportation, Federal Railroad Administration, and Environmental Protection Agency is needed to develop a national policy on railroads, as Federally regulated sources of pollutants in non-attainment areas.

With respect to Section 40702 of the Health and Safety Code, the District could appeal to the Legislature for a change in the law, or issue a rule based on the level of emissions rather than a specific propulsion technology.

IMPLEMENTATION ASSUMPTIONS

This control measure assumes the electrification of likely primary railroad main lines, and the Ports access route, by December 31, 2010.

It is assumed that the extent to which this measure will be effective will be 17% by 2000 and 100% by 2010.

IMPLEMENTATION SCHEDULE

INDICATORS

Tier II

Electrification of rail lines in the basin would reduce railroad emissions by 90 percent by 2010.

PRIMARY BENEFIT

Tier II

ROG will be reduced by approximately 0.20 tons/day by December 31, 2000. ROG will be reduced by approximately 1 ton/day by 2010. These figures will be refined after completion of the detailed electrification study.

REFERENCES

Simmons-Boardman, Car and Locomotive Cyclopedia, 1984, pp. 613-617; H. Cooper, Jr. and R. Buck, "Energy and Economic Benefits of National Railroad Electrification in the United states" In R.A. Fazzolare and C.B. Smith, Beyond the Energy Crisis: Opportunity and Challenge, Pergamon Press, 1981, pp. 1991-2002; Alice E. Kidder, Railroad Electrification Activity, A Summary Report: 1980-1981, prepared for the U.S. Department of Transportation, Federal Railroad Administration, April, 1982; RCTC/AT&SF commuter rail study, Task 3 Report: Electrification Study, prepared by Morrison-Knudsen Engineers, Inc. for the Riverside County Transportation Commission, Feb. 1991.

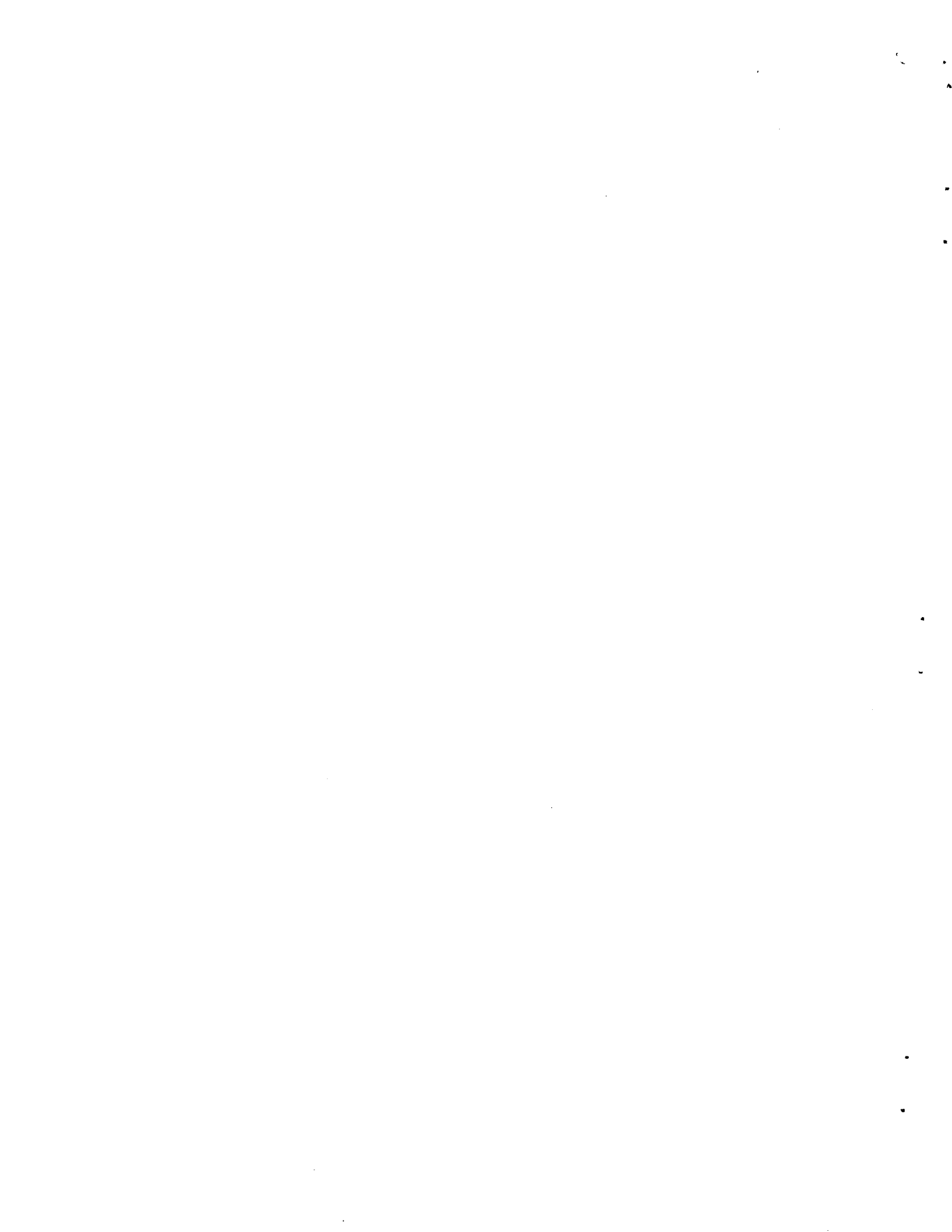
AQMP COMMITMENT SCHEDULE

MEASURE: 14. RAILROAD ELECTRIFICATION

COMMITMENT ACTION	EXISTING LOCAL GOVERNMENT OPTIONS	TIER I	TIER II
ENABLE	<ul style="list-style-type: none"> ● GENERAL PLANS ● RHNA 		
FACILITATE	<ul style="list-style-type: none"> ● FAST TRACK ● BONUS DENSITIES ● A - 95 		
LOCAL REGS.	<ul style="list-style-type: none"> ● ZONING ● BUSINESS LICENSES 		
ASSIST	<ul style="list-style-type: none"> ● ACTIONS AS AN EMPLOYER & CONTRACTOR ● REDEVELOPMENT \$ ● ENTERPRISE ZONES ● TRANSIT \$ 		*
	COOPERATIVE PARTNERSHIPS FORGED		
AGREEMENTS	<ul style="list-style-type: none"> ● MOU'S & JPAS 		*
LEGISLATION	<ul style="list-style-type: none"> ● INCREASE \$ ● NEW AUTHORITIES 		*
	TOP DOWN CONTROL		
REGIONAL REGULATION	<ul style="list-style-type: none"> ● SCAQMD ● SEWER ALLOCATIONS ● GAS RATIONING (EPA) 		*

TIER I ACTIONS SUMMARIZED:

- EPA and FRA conduct detailed feasibility study of railroad electrification by December 31, 1995.
- Study leads to EPA direction and FRA requirement that 90 percent of all rail operations in the SCAB be electrified by December 31, 2010.



14. RAILROAD ELECTRIFICATION

SUMMARY

SOURCE CATEGORY: Trains

CONTROL METHODS: Tier I

- o SCAG and SCAQMD to conduct from 1991-1992 detailed feasibility study of railroad electrification.
- o Railroads to conduct and obtain engineering studies, environmental clearance and financing for pilot project from 1993-1995.

Tier II

- o Railroads to construct pilot project from 1996-1998.
- o Railroads to expand project to other lines from 1999-2010.

IMPLEMENTING AGENCIES:

Railroads, SCAG, SCAQMD.

IMPLEMENTATION ASSUMPTIONS:

Electrification of 90% of rail lines in the basin.

Tier I

None of the emission reductions will occur by January 1, 1994.

Tier II

100% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

ROG will not be reduced by 1994.

Tier II

8.9 Tons/Day ROG reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Electrification of high traffic density railroad lines could significantly reduce emissions from railroad operations in the South Coast Air Basin, provided the added power generation does not contribute added emissions. All railroad locomotives currently in operation in the basin are diesel electric. A large diesel engine drives a generator which provides electricity for the operation of traction motors mounted on the locomotive wheels providing propulsion.

There are three Class I railroads operating in the basin: the Union Pacific Railroad, the Southern Pacific Transportation Company, and the Atchison, Topeka and Santa Fe Railway. There are also two Class II railroads that provide local switching service: the Los Angeles Junction Railway which operates in the cities of Vernon and Maywood, and the Harbor Belt Line, which operates in the Port of Los Angeles. In addition to these freight railroad companies, Amtrak, the regional line haul passenger operator, provides service over the tracks of the Class I railroads.

The Class I railroads operate both line haul and local switching operations in the basin. Line haul service consists of long freight trains operating between major classification and intermodal terminals. Local switching operations involve shorter trains serving customers on both branch lines and main lines. The predominate mode of operation in the basin, however, is line haul.

All rail transit projects currently being built in the basin are electrified, using overhead/third rail distribution systems.

Electrification has been used extensively throughout the world for all types of rail operations. Europe and Japan operate most major line haul operations under electric power with no emissions.

In the United States, railroad electrification began in 1895, when the Baltimore and Ohio Railroad began operating three 1400-horsepower locomotives on a four-mile line through a series of tunnels in Baltimore. These units were used to shuttle trains with steam locomotives through the tunnels. Until 1910, smoke abatement from steam locomotives continued to be the major advantage of electrification.

Between 1910 and 1925 the New Haven and Pennsylvania Railroads developed electrified systems in the congested, high-density territory adjacent to the New York metropolitan area.

Over the last 30 years, however, diesel-electric operations have replaced all electrified operations in freight service, except for a few lines serving electric utilities.

Regulatory History

Section 40702 of the Health and Safety Code specifies that no order, rule, or regulation of any district shall specify the design of equipment, type of construction, or particular method to be used in reducing the release of air contaminants from railroad locomotives. The District could appeal to the Legislature for a change in the law, or the District could issue a rule based on the level of emissions rather than a specific propulsion technology.

Despite the state code, the 1979 AQMP and the 1982 AQMP revision called for rail electrification. The 1979 Plan contained H11 Electrify Railroad Switching Yards. The measure called for replacing existing diesel railroad operations, if appropriate, with overhead electric systems. Electrification and/or other equivalent measures would be applied at the optimal scale of operation to achieve equivalent emission reductions.

The 1982 Plan Revision in M8 Electrification of Railroad Line Haul Operations called for reduction of emissions associated with railroad line haul operations by replacing existing diesel locomotive operations with electrified systems.

Assembly Bill 234 (Leonard) added Section 25310.1 to the Public Resources Code which requires the State Air Resources Board to undertake a joint study with the California railroad industry of the current technology available to reduce locomotive emissions. Section 5 creates the Locomotive Emission Advisory Committee to "study existing and proposed technologies that are economically feasible and practical for the industry to implement in order to contribute to a reduction of railroad locomotive emissions." The committee is to report back with recommendations to the Governor and the Legislature not later than July 1, 1989.

CONTROL METHODS

SCAG and SCAQMD would conduct from 1991-1992 a detailed feasibility study of electrification of rail lines, including cost estimates, engineering issues, institutional arrangements, impacts and political acceptability. The study would identify the most suitable rail line for the pilot project.

The railroads would conduct engineering studies, obtain the environmental clearance and financing for the pilot project from 1993-1995. The railroads would construct the pilot project from 1996-1998 and expand the project to other lines from 1999-2010.

The proposed method of control is to install overhead and/or third rail electrical distribution systems and use electric power for propulsion of locomotives along the major line haul routes into and through the basin. The use of electric power would involve the purchase of new electric locomotives or the retrofit of existing diesel electric locomotives for dual use.

Within the South Coast Air Basin, the primary lines for electrification would be the high density main lines plus the proposed consolidated rail corridor to the Ports of Los Angeles and Long Beach. Terminal, switching, and branch line operations would continue to use diesel-electric locomotives. If railroad traffic on the main lines east of Los Angeles were consolidated onto one or two main lines the cost of electrification per ton or ton-mile could be reduced.

Major lines that could be electrified would be the Southern Pacific San Pedro Branch (the proposed consolidated railroad corridor to the ports); the Santa Fe main line from Los Angeles through Fullerton, Riverside, San Bernardino to Barstow; the Union Pacific main line from Los Angeles through Riverside to Yermo; the Southern Pacific main line from Los Angeles through Colton to Indio. The Union Pacific shares the same corridor with the Santa Fe through downtown Riverside and the Union Pacific has traffic rights over the Santa Fe line over the Cajon Pass. An additional main line that could be electrified would be the Southern Pacific coast line from Los Angeles to Oxnard.

The feasibility study would be required to generate baseline train and electricity emissions data. Upon implementation, the railroads would be required to monitor the progress and effectiveness of the projects and report the results to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

The capital costs of electrification pose a significant obstacle to the implementation of this control measure in the Los Angeles basin, even though substantial savings in operating costs can be projected over the long run. This control measure could pay for itself within twenty years through

savings in operating costs. If the density of traffic is high, however, capital costs per unit of traffic can be reduced. In general, full electrification can be more easily justified from an economic standpoint when the traffic is dense and when the traffic is evenly distributed throughout the day and year.

An additional obstacle to implementation is that any railroad might prefer to electrify entire lines from end to end (for example, the Southern Pacific line from Los Angeles to El Paso), and not just the segments of the lines that are in the South Coast Air Basin.

One possible method of reducing the overall cost of electrification would be to consolidate main line traffic as much as possible. For example, it might be possible to reroute Union Pacific trains onto the SP mainline between the City of Industry and Colton. This would provide the UP with a more direct route to the Cajon Pass and would eliminate the need to electrify that portion of the Union Pacific line from Industry to Riverside. The feasibility of adding additional trains to the SP main line, however, would have to be investigated. The institutional feasibility of this type of consolidation, however, is low. The Santa Fe Second Subdivision (from Los Angeles through Pasadena to San Bernardino) would not be a candidate for electrification because the Santa Fe has proposed to sell it and reroute traffic to the Third Subdivision through Fullerton and Riverside.

Of course the cost to electrify could be significantly reduced if all main line traffic were consolidated onto one of the main lines, such as the Southern Pacific line from Los Angeles to Colton, which is the most direct route to the San Bernardino area. However, the savings in electrification would be offset by costs for additional track capacity and grade separations and other mitigations along this corridor. Again, the institutional feasibility of a major consolidation of this nature is considered very low.

EMISSIONS REDUCTION

Electrified railroad operations in the Basin would eliminate the need for line haul diesel operations entirely for the electrified main lines except in rare emergencies. Electrification would reduce line haul emissions in the Basin by 75% to 90%, as long as new power needed is generated outside the basin.

CONTROL COST

Initial capital costs would be substantial. Accurate estimates of costs are impossible without a detailed feasibility study for the Los Angeles area.

OTHER IMPACTS

Electrification would reduce railroad operating costs, and reduce reliance on oil supplies. Fleet requirements should be reduced, in that a 6,000-horsepower electric locomotive can do twice the work of a 3,000-horsepower diesel electric locomotives. Electric locomotives have greater reliability (mean time between failures is greater). Electric locomotives have longer lives (30 - 40 years) than diesel electrics (15 - 20 years).

Electrification would also require engine changes at the interchange points between electric territory and diesel territory. However, it is likely that these interchange points would be located at rail yards where crew changes already take place (e. g., Barstow).

LEGISLATIVE/RESEARCH NEEDS

A detailed feasibility study of railroad electrification in the South Coast Air Basin should be conducted. The biggest obstacle to electrification is the large capital cost. Funding for electrification could come from the sale of revenue bonds, but assistance from state or federal sources would certainly facilitate implementation of this control measure.

IMPLEMENTATION ASSUMPTIONS

This control measure assumes the electrification of 90 percent of railroads in the basin by 2010.

Tier I

It is assumed that none of the emission reductions will occur by January 1, 1994.

Tier II

It is assumed that 100% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I

No reduction.

Tier II

Electrification of rail lines in the basin would reduce line haul emissions by 90 percent by 2010.

PRIMARY BENEFIT

Tier I

ROG will be not be reduced.

Tier II

ROG will be reduced by 8.9 tons/day.

REFERENCES

Simmons-Boardman, Car and Locomotive Cyclopedia, 1984, pp. 613-617;

H. Cooper, Jr. and R. Buck, "Energy and Economic Benefits of National Railroad Electrification in the United States" In R.A. Fazzolare and C.B. Smith, Beyond the Energy Crisis: Opportunity and Challenge, Pergamon Press, 1981, pp. 1991-2002;

Alice E. Kidder, Railroad Electrification Activity, A Summary Report: 1980-1981, prepared for the U.S. Department of Transportation, Federal Railroad Administration, April, 1982.

AQMP COMMITMENT SCHEDULE

MEASURE: 14. RAILROAD ELECTRIFICATION

COMMITMENT ACTION	EXISTING LOCAL GOVERNMENT OPTIONS	TIER I	TIER II
ENABLE	<ul style="list-style-type: none"> ● GENERAL PLANS ● RHNA 		
FACILITATE	<ul style="list-style-type: none"> ● FAST TRACK ● BONUS DENSITIES ● A - 95 		
LOCAL REGS.	<ul style="list-style-type: none"> ● ZONING ● BUSINESS LICENSES 		
ASSIST	<ul style="list-style-type: none"> ● ACTIONS AS AN EMPLOYER & CONTRACTOR ● REDEVELOPMENT \$ ● ENTERPRISE ZONES ● TRANSIT \$ 		*
	COOPERATIVE PARTNERSHIPS FORGED		
AGREEMENTS	<ul style="list-style-type: none"> ● MOU'S & JPA'S 		*
LEGISLATION	<ul style="list-style-type: none"> ● INCREASE \$ ● NEW AUTHORITIES 	* *	* *
	TOP DOWN CONTROL		
REGIONAL REGULATION	<ul style="list-style-type: none"> ● SCAQMD ● SEWER ALLOCATIONS ● GAS RATIONING (EPA) 		

TIER I ACTIONS SUMMARIZED:

- Detailed feasibility study by SCAG and SCAQMD of railroad electrification conducted from 1991-1992.
- Railroads to obtain financing for pilot project from 1993-1995.

Southern California Regional Rail Authority

October 10, 1991

Los Angeles County
Transportation Commission

Orange County
Transportation Commission

Riverside County
Transportation Commission

San Bernardino
Associated Governments

Ventura County
Transportation Commission

To: Distribution

From: Norm Jester *Norm* Project Manager
Regional Rail Electrification

Subject: Regional Rail Electrification

Attached to this memo are: 1) Summary Minutes of Task Force Meeting No. 1; 2) Meeting Attendance List; 3) AQMD Policy On Rail Electrification; 4) Revised Task Force Organization Chart; and 5) List of Committees and Participants. This memo and its attachments are being mailed to all task force participants and other interested parties.

Regarding Attachment No. 5, the list of committee participants are a result of responses received to date of our request (letter dated October 3, 1991) for individuals to serve on the various committees. The participants' list will be revised as additional representatives are identified. Please call my office with the names of your agency's task force committee representative as soon as possible. As stated in our referenced letter, we encourage all agencies to actively participate in the resultant work products. For easy reference, the Task Force Committees and ChairPersons are as follows:

<u>Committee</u>	<u>ChairPerson</u>	<u>Telephone Number</u>
Steering Committee	Bruce Nestande	(714) 241-5003
Director of Technical	Bob Shipley	(213) 244-7106
Related Committees		
Planning/Engineering and Analysis	Bob Shipley	(213) 244-7106
Operations and Maintenance	Bob McCulloch	(213) 244-6165
Environmental Assessment	Mike Nazemi	(213) 572-2120
Director of Administration	Sharon Greene	(213) 244-6164
Related Committees		
Funding	Linda Bohlinger	(213) 244-6800
Legal/Legislative	Nina Phillips - Claudette Moody	(213) 244-6522 (213) 244-6525
Regulatory Application	Deann Johnson	(818) 302-1710



Regional Rail Electrification Task Force
Page Two

A complete listing, including committee participants along with their mailing addresses and telephone/fax numbers, is included in Attachment No. 5.

At our initial task force meeting, included on the agenda were proposed future meeting dates. Please disregard these dates. Each committee chairperson listed above will contact each member of his/her committee and establish that committee's initial meeting date. As our October 3rd letter suggested, we anticipate that all committees will meet prior to October 18th, if at all possible. We also suggested in our letter that as a minimum, the agenda for the initial meeting should include: 1) Organization; 2) Identification Of Issues To Be Addressed; 3) Work Products; and 4) Subsequent Meeting Dates.

The Task Force Steering Committee will meet on October 31, 1991 from 10:00 A.M. to 12 Noon in the Los Angeles Conference Room located on the 10th Floor of the LACTC Offices at 818 West Seventh Street, Los Angeles. It is anticipated that at the Steering Committee Meeting, each committee chairperson will provide a briefing of their committee's activities. Unless otherwise required, the Steering Committee will meet on a monthly basis. Bruce Nestande (Steering Committee Chairman), will advise Steering Committee members of future meeting dates.

Please call me if you have any questions. I can be reached at (213) 244-6360 or FAX number (213) 244-6002. Thank you for your continued interest in this important topic.

NJ/df

Attachments

ATTACHMENT 1

Regional Rail Electrification Task Force Meeting No. 1 - Summary

September 24, 1991

The first meeting of the Regional Rail Electrification Task Force established by the Southern California Regional Rail Authority (SCRRA) was held on Tuesday, September 24, 1991 at the Los Angeles County Transportation Commission's offices in downtown Los Angeles. The Task Force will be chaired by Bruce Nestande. The meeting was attended by over 60 delegates representing 18 different agencies, 4 railroads, and several engineering consulting firms.

Agencies represented included the Los Angeles County Transportation Commission (LACTC), California Transportation Commission (CTC), Caltrans, Southern California Regional Rail Authority (SCRRA), South Coast Air Quality Management District (SCAQMD), California Public Utilities Commission (CPUC), California Air Resources Board (CARB), Coalition for Clean Air, Southern California Gas Company, Department of Water and Power (DWP), Southern California Edison (SCE), Ventura County Air Pollution Control District, Riverside County Transportation Commission (RCTC), Ventura County Transportation Commission (VCTC), Southern California Association of Governments (SCAG), San Bernardino Associated Governments (SANBAG), the Alameda Corridor Transportation Authority, and the Orange County Transportation Authority.

Railroads represented at the meeting were Amtrak, Santa Fe, Southern Pacific, and Union Pacific.

The purpose of this initial meeting was to develop consensus among the participants on the scope and goals of the overall project and, more specifically, to identify the work that the Task Force will undertake over approximately the next four months. The goal will be to develop an implementation and financing plan for electrification of rail service in the Los Angeles Basin as expeditiously as possible.

To that end, the Task Force staff presented an overview of the proposed Commuter Rail network as well as freight corridors within the Basin which could be considered for accelerated electrification. Included in this presentation was the potential for consolidating the Southern Pacific and Union Pacific freight service along a common corridor to the Port of Los Angeles/Long Beach and for electrifying this route.

Hank Wedaa of the SCAQMD presented the position of the SCAQMD with regard to railroad electrification.

A detailed work plan was presented by Norm Jester, Project Manager for the Regional Rail Electrification Program. This work program detailed the tasks and schedule for a two part, \$720,000 work effort to be carried out over the next four months. Part I of the work program focuses on the Consolidated UP/SP Corridor. Part II, which will be conducted simultaneously, focuses on development of an implementation and funding plan for electrification of other rail corridors throughout the region. A copy of the work plan/scope and schedule was distributed at the meeting and is presently being refined and updated.

Representatives of the CPUC outlined the informational requirements to be included in applications for rate base changes submitted by the various utility companies. They stressed that time is of the essence since once the information is received by the PUC, about six months would be required to review the application. Of prime importance in the application(s) are the route miles and forecasted dates for electrifying the various routes.

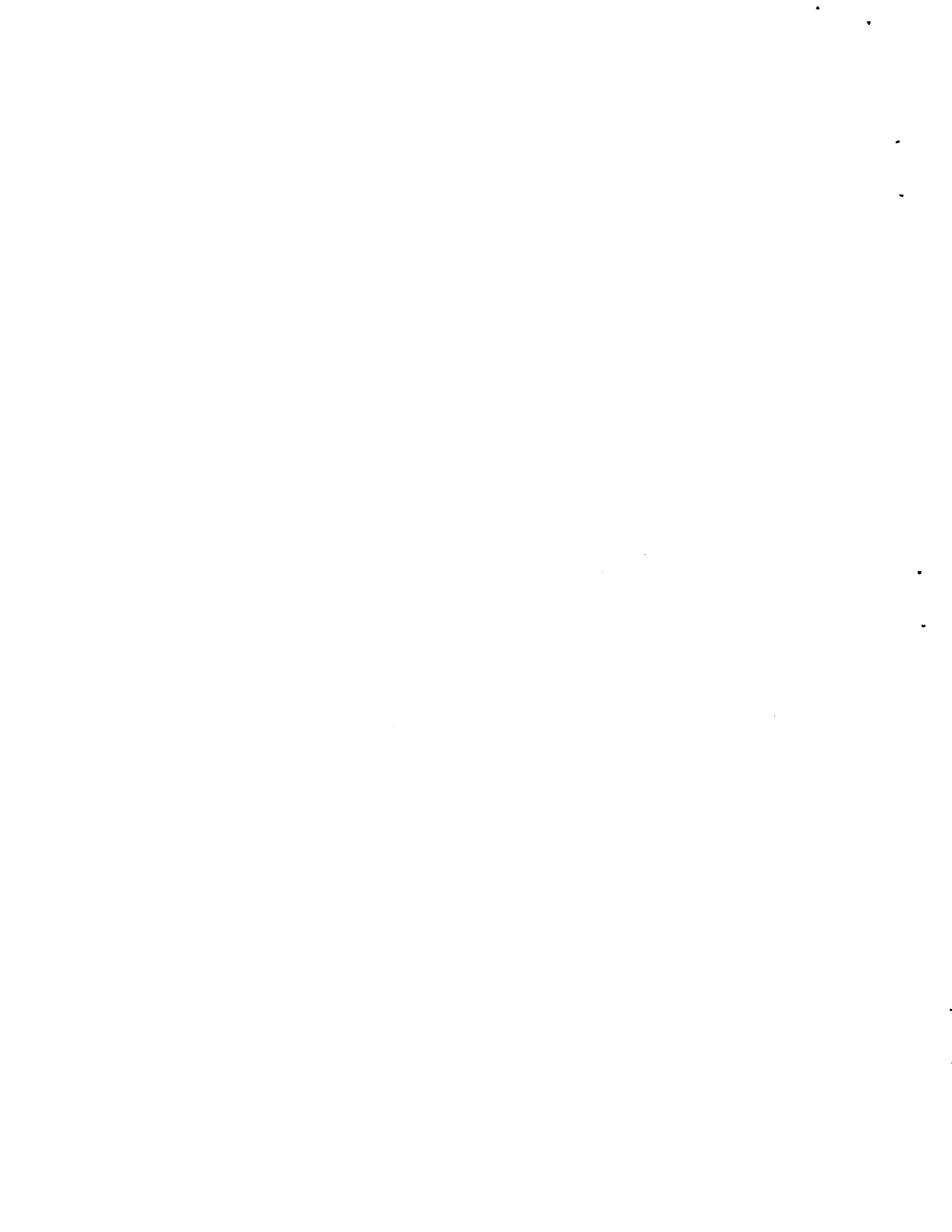
As described by staff, the Consolidated Corridor route would extend from Colton to Los Angeles Harbor utilizing SP tracks from Colton to Industry, UP track from Industry to Redondo Jct., and SP track in the Alameda Corridor to Delores Intermodal Container Transfer Facility (ICTF) in Carson. Railroad representatives pointed out that Colton does not necessarily represent the logical eastern border for the electrification since the railroads involved each have different eastern operational end points such as Barstow, Yermo, Indio, etc.

The Riverside County delegates stressed that the various proposition bond monies, as approved by the voters, were earmarked for moving commuters, and that additional funds would be required for railroad electrification. Jack Reagan of RCTC supported the concept of electrifying the Consolidated UP/SP Corridor. He further noted the potential for electrification of the Riverside-Los Angeles commuter route proposed to be operational in 1993 as long as electrification could be accomplished without adverse impact on schedule and funding.

All parties present at the meeting were generally in agreement that the responsibility for funding the electrification of rail services represented a major issue that will need to be addressed by the various participants. Ray Grabinski of the LACTC stated that a more immediate funding issue facing the Task Force was the need to identify funding sources for the Accelerated Rail Electrification Study itself. This issue will be addressed at an early date by the SCRRA, LACTC and other Task Force participants.

Mr. Grabinski also noted that in order to maximize opportunities for air quality improvement, participation by the freight railroads would be required.

A structure for the Task Force was proposed. This structure calls for active involvement by Task Force participants in various working committees. (Revised Task Force Organization Chart attached).



ATTACHMENT 2

**PARTICIPANTS AT THE AUGUST 24, 1991
TASK FORCE MEETING KICK-OFF**

(Revised 10/10/91)

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Neil Peterson, Executive Director**

Richard Stanger, Director, Rail Development

Norm Jester, Director Special Projects

Richard Howell, Project Manager, DCC/SCRAA

D. Robert McCulloch, Senior Associate (Booz-Allen)

John Rinard, Chief Engineer

Marshall Allen, Project Manager, SCRAA

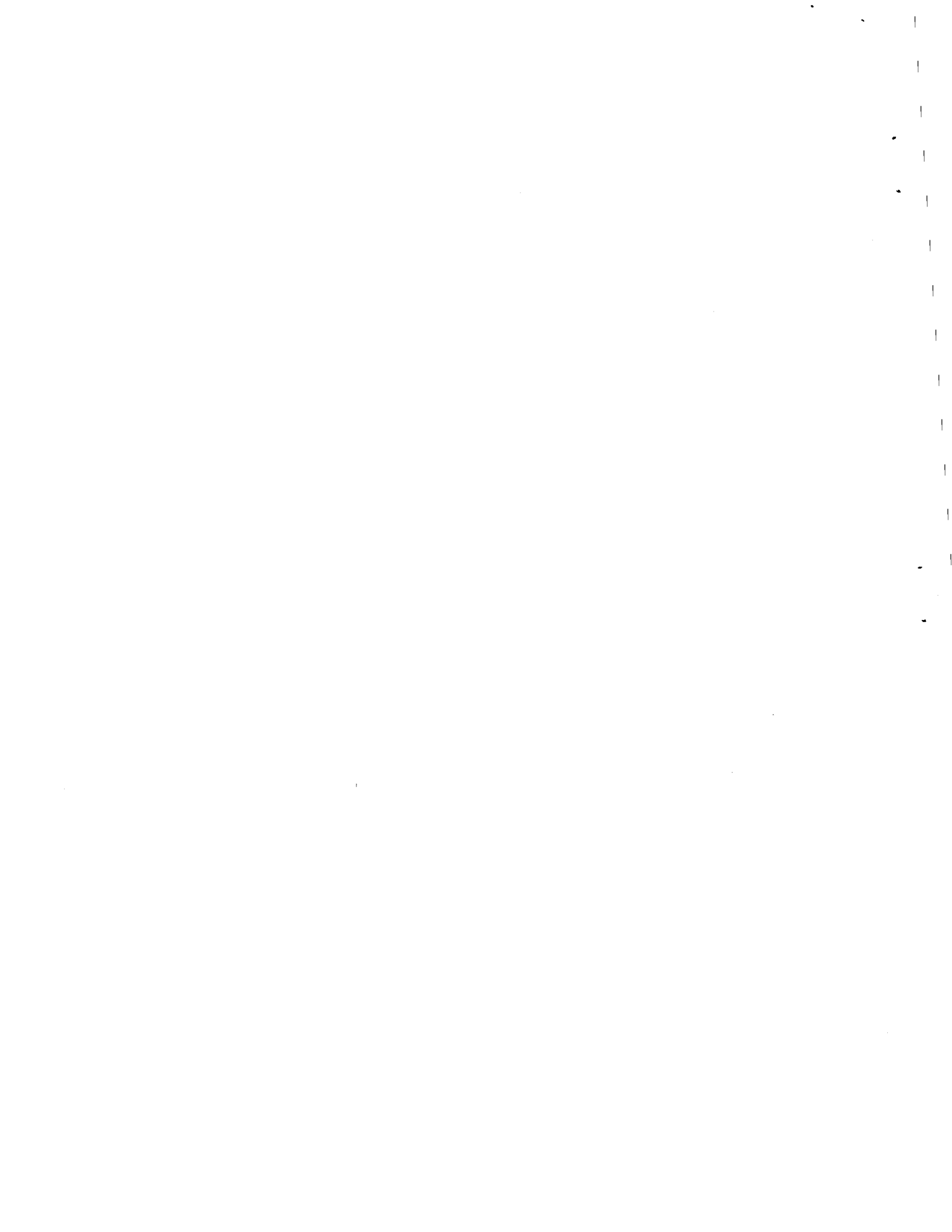
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Rebecca Barrantes, Air Quality Management Administrator

Lupe Valdez, San Gabriel Valley Area Team

Jim Ortner, Air Quality Transportation Administrator



ATTACHMENT 3

DISTRICT POLICY POSITION REGARDING RAILROAD ELECTRIFICATION

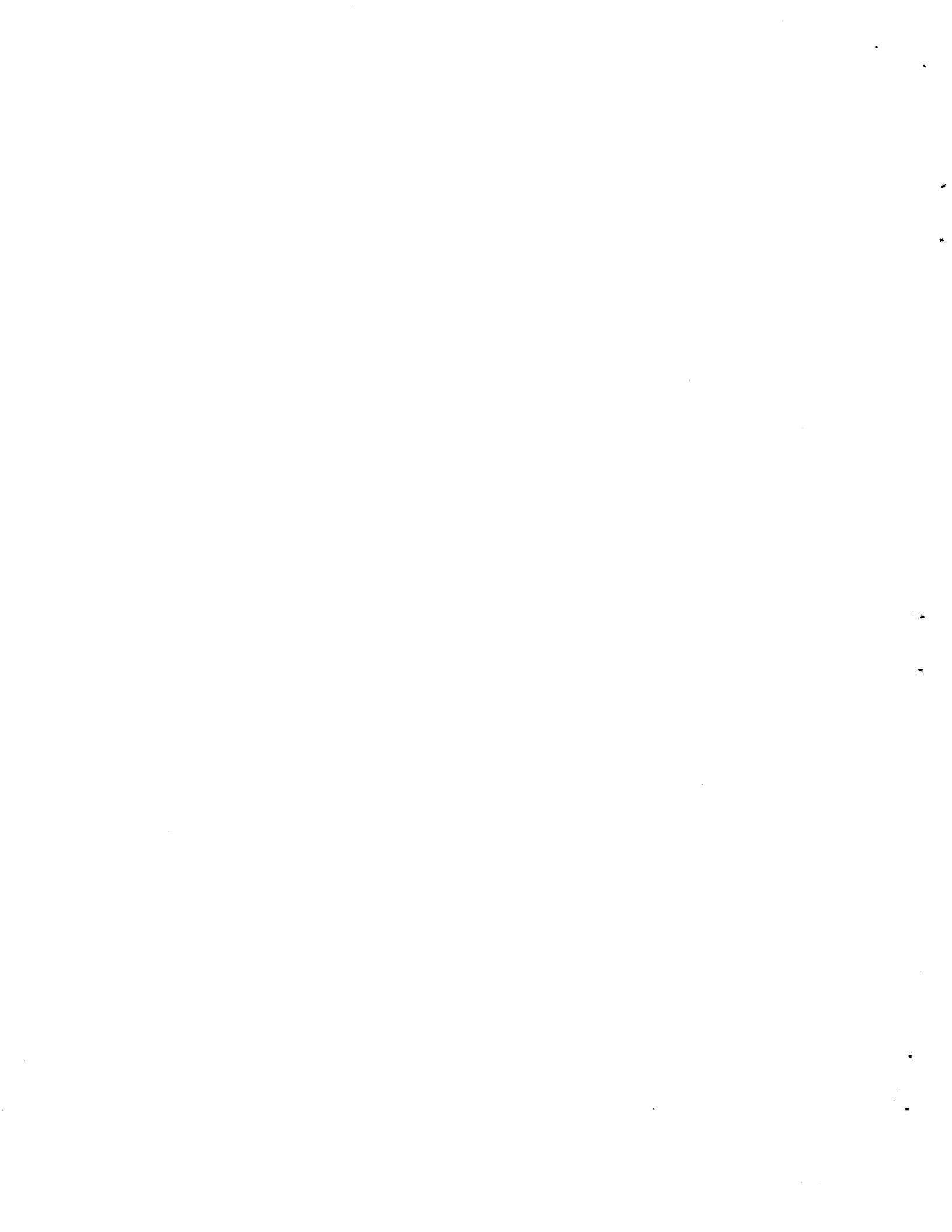
General Position

The District's 1991 Air Quality Management Plan Update contains a control measure that specifically designates a 90 percent electrification target for all railroad operations in the Basin, by the year 2010. Furthermore, the air quality benefits from this measure are programmed into our clean air attainment projections. Therefore, consistent with this control measure, the District supports the expedited electrification of all railroad lines, passenger and freight, in the effort to attain clean air in the Basin.

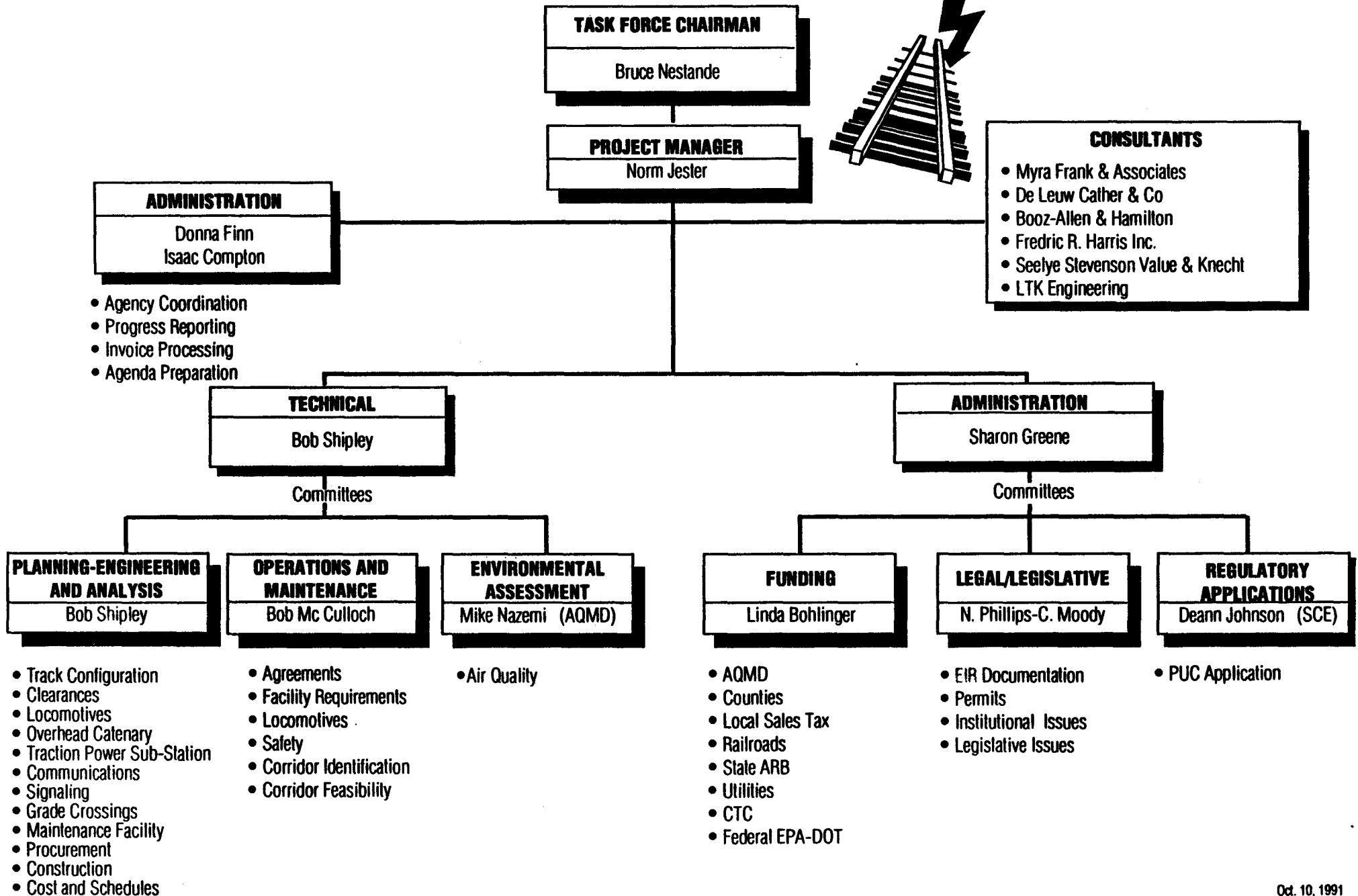
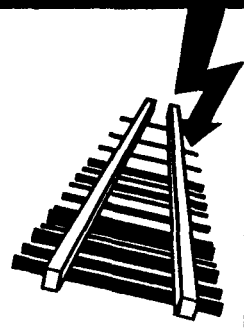
Position Regarding LACTC Commuter Rail Project

The District is aware of the pending decisions to use diesel locomotives for the first three routes of the proposed commuter rail system. This action, in our view, could set a precedent for future diesel locomotive purchases for the rest of the proposed commuter rail system, as well as other locomotive projects. However, rather than debate this initial purchase of diesel locomotives for a limited number of train routes, attention should focus on CTC efforts, commitments, and near term plans to electrify railroad operations in the Basin. In particular, the District supports the development of plans, by the Los Angeles County Transportation Commission under CTC direction, that would: 1) phase-out the diesel locomotives that are planned initially to be put into operation, 2) phase-in electric locomotives for all routes of the proposed commuter rail system, and 3) phase-in electric locomotives for all other passenger and freight routes in the Basin.

With regard to the relative emissions impacts for diesel trains compared to commuter vehicles, our findings are that hydrocarbon, carbon monoxide, and particulate emissions will be reduced. However, NOx emissions may increase, depending on train ridership assumptions, and to a smaller degree on train system design and operation. Based on a review of analyses that have been developed by Southern California Edison, Coalition for Clean Air, and LACTC, as well as our own studies, it appears that NOx emissions for the proposed commuter rail system will increase somewhat with diesel locomotive implementation. However, electric trains will of course reduce all four pollutant categories by an even greater amount.



REGIONAL RAIL ELECTRIFICATION TASK FORCE



ATTACHMENT 5

SOUTHERN CALIFORNIA REGIONAL RAIL
ELECTRIFICATION TASK FORCE

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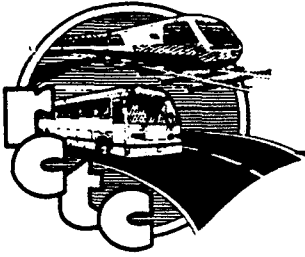
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RIVERSIDE COUNTY TRANSPORTATION COMMISSION

**MINUTES 10-91
OCTOBER 9, 1991**

5. COMMUTER RAIL

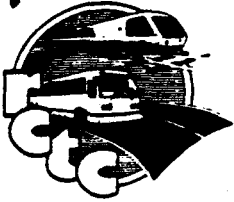
5A. COMMUTER RAIL ELECTRIFICATION.

Jack Reagan reported that, within the past few months, critics of the Southern California Regional Rail Authority's proposal to initiate commuter rail with diesel locomotive have become vocal. The Southern California Edison Company was the first to advocate that the initial service should be electrified. Their position has been supported by a variety of environmental interests. At issue is the potential that diesel locomotives may add to Nitrous Oxide (NOX) emissions SCE contends that the commuter rail locomotive will actually add more NOX emission than the automobiles they replace. The SCRRA takes issue with that assertion, pointing out that substantial reductions in reactive organic gases (ROG) and carbon monoxide (CO) need to be balanced against NOX analysis, and that reduction in NOX emissions compared to automobiles begin to appear and increase as ridership demand yields five or more rail car trains. The SCAQMD passed a Resolution that acknowledged that service may start on the first three rail lines with diesel locomotives, subsequent lines should be electrified, and the other three lines should be electrified as soon as possible. He further reported that RCTC was the first in Southern California to take electric rail service seriously. Morrison-Knudsen Engineers, along with Santa Fe, did a study to examine the steps necessary to electrify the Santa Fe rail system from San Bernardino through Riverside and Fullerton and north to Los Angeles. Also studied was the San Jacinto Branch line, the Olive Subdivision into Orange County and an extension into Irvine. The results of this study showed that, over 35 years, it would still be \$200 million (+/-) more expensive for electrification than for diesel service. He further stated that, in light of this cost versus air quality, and after discussion with Chairperson Cenicerros and Commissioner Wilson, a letter was sent to Jackie Bacharach, SCRRA Chairperson. It supports the LACTC proposal to seek a consolidated corridor for transcontinental rail freight service, supports electrification of that corridor, advocates electrification of commuter service to Riverside, suggest a Spring 1993 timeline for SCE and other funding arrangements for electrification, advocates initial Riverside to Los Angeles commuter rail with diesel locomotives if that deadline cannot be met, and offers to forego the approved Transit Capital Improvement (TCI) grant to acquire diesel locomotives in favor of equipment lease.

Commissioner Wilson clarified that the policy adopted by the SCAQMD took a position on how the rail authority's movement toward diesel meshes with the Air Quality Management Plan. The response by AQMD stated they could agree to the first three lines being diesel if there was a commitment for electrification in the future as quickly as possible. The Air Quality Plan calls for electrification for 90% of the lines by 2010. The discussion at the SCAQMD meeting was based upon the fact that a more comprehensive study will be completed in January 1992, which outlines the feasibility and the timetable for electrification of rail in Southern California. The letter from Jack Reagan to Jackie Bacharach was very consistent with the philosophy of much of the discussion of the SCAQMD and recommended that the letter be re-drafted and addressed to SCAQMD Transportation Committee.

M/S/C (WILSON/LARSON) that the Commission:

- (1) Support the SCRRA proposed 'Accelerated Electrification Program' study, subject to:**
 - (a) Other affected agencies should bear a reasonable share of the costs (i.e., at least 50% of the costs should come from other than SCRRA member agencies' local funds;**
 - (b) RCTC should receive a credit of \$63,000, which is the amount RCTC paid for the Morrison-Knudsen Engineer electrification study effort without benefit of participation by the other SCRRA member agencies;**
- (2) Should offer the balance of TCI funding from its existing approved rolling stock grant after acquisition of ten UTDC rail cars toward SCRRA proposed electrification studies and preliminary engineering - estimated to be approximately \$1.5 million. These funds will not be expended if initial RCTC service would involve lease equipment, and would be far too little if electric locomotives are required; and**
- (3) Should support the LACTC proposal for a Consolidated Corridor/Riverside to Los Angeles rail electrification demonstration program, and request this proposal be analyzed during the SCRRA study.**



RIVERSIDE COUNTY TRANSPORTATION COMMISSION

DATE: October 9, 1991

TO: Riverside County Transportation Commission

FROM: Jack Reagan, Executive Director

SUBJECT: Commuter Rail Electrification

Within the past few months, critics of the Southern California Regional Rail Authority's (SCRRA) proposal to initiate commuter rail with diesel locomotives have become vocal. The Southern California Edison Company (SCE) was the first to advocate that the initial service should be electrified. Their position has been supported by a variety of environmental interests. At issue is the potential that diesel locomotives may add to Nitrous Oxide (NOX) emissions; SCE contends that the commuter rail locomotives will actually add more NOX emissions than the automobiles they replace. The SCRRA takes issue with that assertion, pointing out that substantial reductions in reactive organic gases (ROG) and carbon monoxide (CO) need to be balanced against NOX analysis, and that reductions in NOX emissions compared to automobiles begin to appear and increase as ridership demand yields five or more rail car trains. Despite the technical controversy, no one refutes the contention that electrified commuter rail would provide more clean air benefits than either automobiles or diesel powered rail.

Other primary issues related to rail electrification are costs and participation of freight operations. The cost to electrify rail is substantial, approaching the initial costs of right-of-way (at our assumed costs), trackage improvements, and rolling stock. The study performed by Morrison Knudsen Engineers for RCTC indicates that even after 35 years, it would still be more costly to provide for electrified rather than diesel service (approximately \$200 million more in today's dollars for the Santa Fe system alone). Although the region might realize air quality benefits equal in value to the higher costs, how would electrification be funded? If it is assumed that existing rail bonds and sales taxes are to fund electrification of commuter rail, some services would have to be foregone to enable commuter rail electrification - most likely service from or within the Inland area. SCE has indicated some willingness to participate in capitalization, but it would be necessary for the California Public Utilities Commission (PUC) to allow such costs to be passed on to rate payers and such SCE participation would not cover the full costs. In addition, the bulk of anticipated rail locomotives to at least 2010 will be used for freight trains, yet the focus of discussion has been on commuter rail. The SCRRA position is that rail electrification planning must also consider freight rail operations.

Generally, the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB) are supporting rail electrification at the earliest possible date. Although it appears that these agencies will not attempt to stand in the way of SCRRA's acquisition of the initial seventeen diesel locomotives to initiate service in 1992 on three corridors (San Bernardino, Moorpark, and Saugus to Los Angeles), CARB has advocated that SCRRA should not exercise its option for twelve additional diesels and that the fourth and subsequent lines should be electrified. This would cause a problem for us, since the Riverside to Los Angeles service on the Union Pacific line is scheduled for Spring 1993.

In light of this dilemma, and after discussions with Chairperson Cenicerros and Commissioner Wilson, the attached letter was sent to Ms. Jackie Bacharach, SCRRA Chairperson. It supports the LACTC proposal to seek a consolidated corridor for transcontinental rail freight service, supports electrification of that corridor, advocates electrification of commuter service to Riverside, suggests a Spring 1993 timeline for SCE and other funding arrangements for electrification, advocates initial Riverside to Los Angeles commuter rail with diesel locomotives if that deadline cannot be met, and offers to forego the approved Transit Capital Improvement (TCI) grant to acquire diesel locomotives in favor of equipment lease.

On September 24, 1991, the SCRRA sponsored a meeting of all interested parties to develop a proposed study approach to determine the most appropriate approach for rail electrification. A copy of the study outline and names of those in attendance is attached. SCRRA will be seeking financial assistance from participating and interested agencies to undertake the study; the amount of RCTC's potential participation is not yet known.

STAFF RECOMMENDATIONS

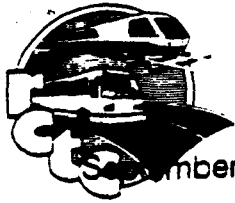
1. RCTC should support the SCRRA proposed "Accelerated Electrification Program" study, subject to the following conditions:
 - a) Other affected agencies should bear a reasonable share of the costs (i.e., at least 50% of the costs should come from other than SCRRA member agencies' local funds); and
 - b) RCTC should receive a credit of \$63,000, which is the amount we paid for the Morrison-Knudsen Engineers electrification study effort without benefit of participation by the other SCRRA member agencies.

2. RCTC should offer the balance of TCI funding from its existing approved rolling stock grant after acquisition of ten UTDC rail cars toward SCRRRA proposed electrification studies and preliminary engineering - estimated to be approximately \$1.5 million. These funds will not be expended if initial RCTC service would involve lease equipment, and would be far too little if electric locomotives are required.
3. RCTC should support the above referenced proposal for a Consolidated Corridor/Riverside to Los Angeles rail electrification demonstration program (i.e., September 19, 1991 letter), and request that this proposal be analyzed during the SCRRRA study.

JR:jw

attachments





RIVERSIDE COUNTY TRANSPORTATION COMMISSION

September 19, 1991

Ms. Jackie Bacharach, Chairperson
Southern California Regional Rail Authority
5033 Rockvalley Rd
Rancho Palo Verdes, CA 90274

Subject: Consolidated Corridor Rail Electrification Demonstration

Dear Jackie:

I certainly support the proposed "Clean Fuel Technology Implementation for Railroads in the Los Angeles Basin" work activity. I will be present for the meeting on September 24, 1991 to participate in reviewing the proposed scope of work, and will recommend that RCTC share in paying reasonable costs for the study. Although I do not want to prejudge the outcome of the study effort, I believe it would be helpful for you and the SCRRA staff to be aware of our thoughts in support of using the Consolidated Rail Corridor proposal as a basis for a freight/commuter rail electrification demonstration project.

I have discussed this with Kay Cenicerros, RCTC Chairperson, and Commissioner Roy Wilson, who also is a member of the SCAQMD; Kay has also discussed it with Supervisor Norton Younglove. As I understand, they all believe the idea has merit. The key points offered for consideration are as follows:

- * The SCRRA staff have reached preliminary agreement with Union Pacific which would enable commuter rail service to Riverside by Spring 1993. This would be the fourth line on which commuter rail service would be implemented. RCTC supports adherence to that schedule.
- * The California Air Resources Board staff has suggested that commuter rail service on the first three lines should be authorized to start with diesel locomotives, but that all subsequent lines should be electrified. I sense that key CTC and SCAQMD members will support the CARB position.
- * We generally agree with Richard Stanger's and other SCRRA staff assumptions that the greatest potential for avoiding freight/passenger rail conflicts, at least at the lowest cost for trackage improvements, would be to create a Consolidated Rail Corridor from the Port of Long Beach to Colton. We further agree with the assumption that the greatest relative air quality benefit at least cost would result from electrification of such a consolidated corridor. I believe the SCRRA staff has suggested that such a corridor would include the existing Alameda Rail Corridor.

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September 19, 1991
Ms. Jackie Bacharach

with extension to Colton using a combination of Union Pacific and Southern Pacific rights-of-way. A portion of the Union Pacific right-of-way would also serve the Riverside to Los Angeles commuter trains.

- * We might offer to CTC, SCAQMD, and the Southern California Edison Company that a rail electrification demonstration project should be pursued on the proposed Consolidated Rail Corridor. Presumably, electrification would include extension of the technology from a UP/SP junction in San Bernardino County to the Riverside downtown. This would mean that the Riverside to Los Angeles commuter rail line would be proposed for electrification. The proposal should include the following provisions and protection:
 - * There should be no diversion of existing Proposition 108 or 116 funds, or local sales tax funds, which are currently identified in the Southern California Commuter Rail, 1991 Regional System Plan and programmed in the 1990 STIP to pay for rail electrification.
 - * We should support the SCE proposal to capitalize the electrification improvements for the demonstration project, subject to approval by PUC to pass costs on to general rate payers.
 - * Failing such approval, funding for the demonstration project should be sought from SCAQMD (Motor Vehicle License Fees), Federal, and State sources. Such funding might also be sought to supplement SCE investments in the event PUC does support their full funding of all capital costs.
 - * A schedule for electrification of the corridor would be set to enable implementation of rail electrification by Spring 1993.
 - * If SCE cannot meet such a schedule, commuter service from Riverside to Los Angeles would be initiated in Spring 1993, using leased diesel locomotives. RCTC will forgo acquisition of diesel locomotives for which CTC has already approved Transit Capital Improvement funding; we would propose to shift TCI funding to SCRRA for acquisition of commuter rail cars.
 - * Electrification of freight and commuter rail service on the consolidated corridor, including commuter rail from Riverside to Los Angeles, would then be implemented as soon as possible.

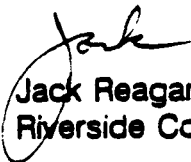
Page Three
September 19, 1991
Ms. Jackie Bacharach

The possible downside of this proposal are as follows:

- * It would prejudge electrification as the appropriate technology. However, we may find within the next month or so that CTC, SCAQMD, CARB, etc. have already reached such a conclusion.
- * It would require the SCRRA to maintain two types of technology - diesel and electric. However, in light of the need to shift to some clean fuel locomotion at some point, and the fear of some that once SCRRA begins with diesel we will resist change, such short-term inefficiencies might help us relate better to other interested agencies.

I hope that we may give this proposal some consideration as we proceed with developing the scope of work for the clean fuel/rail study effort.

Sincerely,



Jack Reagan, Executive Director
Riverside County Transportation Commission

JR:sc

cc: Richard Stanger
David Solow



AQMD seeks diesel train compromise

By Steven Tamaya
Staff Writer

EL MONTE — Directors of the South Coast Air Quality Management District voted Friday to seek a compromise, allowing the immediate use of diesel-powered commuter trains as long as the rail systems are eventually converted to electricity.

After nearly two hours of debate, the AQMD board adopted a resolution, on an 8-3 vote, basically reaffirming the air pollution control agency's rule that requires 90 percent of all rail lines in the four-county South Coast basin to be electrified by the year 2010.

But the measure also endorsed the deployment of diesel-fueled trains as an interim step to quickly begin commuter service until the routes can be later converted to electricity.

The resolution was drafted to strike a balance with proponents of mass transit who were worried the AQMD would delay opening commuter rail lines in the San Gabriel Valley and other areas by insisting on only electric-powered trains.

According to the California Transportation Commission, which met earlier this week with AQMD officials on the issue, some rail lines could be operating as early as 1992 or 1993 with conventional diesel-powered trains.

But development of a regional rail system based only on electricity would delay commuter service in Southern California by four to six years, AQMD board members were reminded Friday.

AQMD officials said they did not want to stand in the way of commuter rail, citing how mass transit has the same intent to reduce traffic and air pollution generated by motor vehicles now clogging local freeways and streets.

"This board is sticking its neck out and saying (to) put diesel on the first lines," said Los Angeles City Councilman Marvin Braude, an AQMD board member.

In a move that may force a speedier conversion to electric-powered rail lines within a few years, AQMD officials will consider later this month a proposal to adopt an earlier deadline: the year 2000.

Although cleaner-burning liquid fuels are continuing to be developed, the district sees an electric future for the Southland in order to meet federal clean air standards.

"It's an electric system, folks, and that's the way it has to be," said Covina City Councilman Henry Morgan, who represents Valley cities on the AQMD panel.

Board members voting against the resolution demanding the conversion to electricity — including Los Angeles County Supervisor Michael Antonovich — said they also supported the concept of an electric rail system but wanted more time to thoroughly study the problem.

"I don't see why we have to formulate policy today," said Steven Albright, the governor's delegate on the board.

But supporters of the resolution argued the failure to make a statement now would send a signal that the AQMD's resolve to eradicate large sources of air pollution is weakening.

XXX

Will electric trains aid Southland air quality?

By Steve Scauzillo
Environmental Writer

EL MONTE — The issues of air quality and traffic congestion merged Monday when members of the local air quality board and the California Transportation Commission met to debate electrification of commuter-rail lines.

Both agreed that commuter rail is coming to Southern California, including at least two lines through the San Gabriel Valley. But they couldn't decide whether to use diesel locomotives or electric trains.

"I'd like to figure out a way to do both," said Henry Morgan, a Covina councilman and member of the South Coast Air Quality Management District. Morgan and other AQMD board members expressed support for the Southern California Regional Rail Authority's plan to begin service with diesel locomotives, a much more polluting source.

Members of the state transportation panel were sharply divided on whether to allow the use of state funds raised through two voter-approved transit propositions to buy diesel locomotives. The regional rail authority has ordered 17 diesel locomotives and is committed to spending \$35 million on the dirtier rail system.

The AQMD board members supported the diesel trains as an interim step, despite being reminded that it adopted an air plan which calls for the replacement of diesel locomotives with electric ones by 2010.

Pat Leyden, AQMD's deputy executive officer, told the joint board that trains account for 34 tons per day of oxides of nitrogen, a pollutant that is a precursor to ozone formation. If diesels

are used for commuter rail, that figure will rise to 37 tons per day by 2010.

But not even the environmental community could agree on the issue. Despite the obvious pollution hazard posed by smoke-belching diesel trains, the Coalition For Clean Air supported diesel commuter rail as an interim measure, "in the interest of getting the system up and running as quickly as possible."

Joel Schwartz, the Coalition's staff scientist, said electrification should come close behind the start-up of mass transit in Southern California. But the first thing to do is get people out of their cars. "The voters of Southern California want public transportation now."

The Natural Resources Defense Council, a national environmental group, said in a letter to Dan Fessler, who serves on both the California Public Utility Commission and the CTC, that state bond money should be withheld from the rail authority.

"The NRDC strongly urges the CTC to insist that the entire system be redesigned for electric locomotives . . ."

Neil Peterson, executive director of the Los Angeles County Transportation Commission, has told his commission that redesigning for all electric trains would delay the proposed October 1992 starting date for six years.

Ken Kevorkian, vice chairman of the CTC, said: "A majority of us want to get the system going as soon as possible."

Both boards will meet separately to decide, the CTC in Sacramento and the AQMD in El Monte on Friday. Most AQMD board members Monday gave qualified support for the diesel trains.

XXX

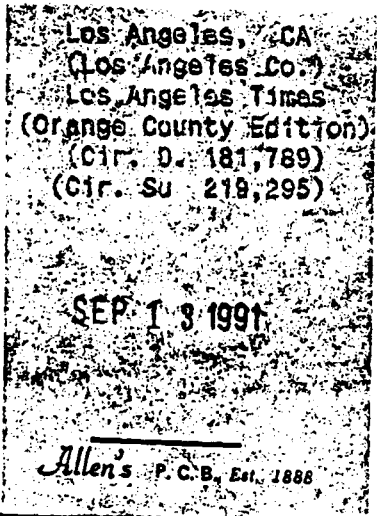
Metro Digest Local News in Brief

AQMD Directors Move to Block Diesel Trains

South Coast Air Quality Management District directors, meeting in El Monte, voted 8 to 3, to urge the California Transportation Commission to withhold funds for a proposed commuter rail service until its builders agree in writing to promise to switch to nonpolluting electric locomotives.

State funding is key to the Southern California Regional Rail Authority's plan to start commuter-rail service next October using cheaper, readily available diesel engines. By some estimates, using electric trains would cost an additional \$300 million and delay service four to seven years on some lines. The AQMD, however, would support temporary use of diesels on the lines scheduled to open next year.

Neil Peterson, speaking for the Regional Rail Authority, called the AQMD "totally premature" because the cost-effectiveness of electrification is still being analyzed.



Utilities Offer to Pay for Rail Electrifying

1347 2784

The environmental debate over the planned use of pollution-spewing diesel locomotives on Southland commuter trains continued Thursday, with the Los Angeles Department of Water and Power and Southern California Edison Co. offering to help pay the enormous cost of electrifying the entire rail system.

Orange County officials repeated warnings that electrification, although desirable, could delay the county's scheduled 1993 expansion of commuter rail service.

The offer by Edison and DWP to provide the capital for electrification surfaced at Thursday's meeting of the California Transportation Commission in Newport Beach. The state panel is being asked to approve the purchase by the Los Angeles County Transportation Commission of rail equipment and rights of way with money from state rail bonds, and some commission members are pressing for immediate electrification, which is standard throughout Europe.

Although Orange County is planning to expand commuter rail service, it has left most equipment decisions to the Los Angeles commission, which has been ordering diesel locomotives for all coun-

ties that are members of a regional rail authority.

The debate over the best source of rail power began two months ago, when Edison estimated that diesel locomotives would produce more nitrogen oxide pollution in the South Coast air basin than motorists would if they never left their cars to fill new commuter trains.

L.A. County Transportation Commission officials strongly dispute Edison's data but acknowledge that nitrogen oxide emissions would worsen with diesel locomotives in the short term, until large numbers of commuters switch to trains. Such emissions are a key ingredient of smog and the most difficult to control, state officials said.

Many rail advocates argue that electrification is needed but should not delay the scheduled start of commuter rail service.

Two state transportation commission members—Jerry B. Epstein and Ken Kevorkian, both of Los Angeles—argued Thursday that delays would frustrate voters who recently passed county sales tax measures in Orange, Los Angeles and Riverside counties to pay for rail projects. They also noted that new tax proposals for transportation are expected on ballots in the next few years.

The Edison-DWP offer is dependent partly on state Public Utility Commission granting applications for rate increases to be paid by consumers in each utility's

service territory. One estimate put the rate hike at about 56 cents per month, per customer — JEFFREY A. PERLMAN

**SOUTHERN CALIFORNIA REGIONAL
RAIL
ACCELERATED ELECTRIFICATION
PROGRAM**



Task Force Meeting No. 1

Tuesday, September 24, 1991

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

ELECTRIFICATION TASK FORCE MEETING

Los Angeles County Transportation Commission
818 West 7th Street - Long Beach Room (11th fl.)
Los Angeles, Ca. 90017

9:30 a.m.

AGENDA

CHAIRMAN: Bruce Nestande

1. Introduction and Welcome - Jacki Bacharach, SCRRA and LACTC
2. Opening Remarks - Neil Peterson, LACTC
 - Objective of Task Force
 - Introduction of Task Force Chairman
3. Opening Remarks - Bruce Nestande, Task Force Chairman
4. Background Air Quality Issues - Hank Weeda, SCAQMD, and Michael Nazemi, SCAQMD
5. Regional Rail Plans for Commuter and Freight Service - Richard Stanger, SCRRA
 - Regional Commuter Rail Plan (SB 1402)
 - Consolidated Freight Service Plan
6. Work Program Technical Approach - Norm Jester, LACTC
7. Agency Filing Requirements
 - Regulatory Agency Perspective - Daniel Fessler, CPUC
 - Applicant Perspective - Robert Dietch, SCE
8. Task Force Mechanics and Meeting Schedule - Bruce Nestande
9. Work Program Funding - Neil Peterson
10. Other Business

PROPOSED FUTURE MEETING DATES:

- Technical Committee: Oct. 15, 1991 9:00-10:30 a.m.
- Financial/Admin Committee: Oct. 22, 1991 10:45 a.m.- noon
- Task Force Meeting: October 29, 1991 9:30 a.m.

ACCELERATED ELECTRIFICATION PROGRAM

PROGRAM OUTLINE

- Purpose
- Assumptions
- Work Tasks
- Schedule
- Resources

PURPOSE OF PROGRAM

The purpose of this program is to develop an implementation plan for the accelerated electrification of freight, intercity passenger and commuter rail lines in Southern California.

ASSUMPTIONS

- The program will include freight, intercity passenger (Amtrak), and commuter rail routes.
- All selected rail corridors/routes will be electrified on an accelerated time table, consistent with the availability of funding, the year 2010 electrification goal contained in the 1991 Air Quality Management Plan not withstanding .

TWO PART WORK PROGRAM:

- PART I – Develop Implementation Plan for the Consolidated UP-SP Corridor.
- PART II – Identify and select other routes for electrification.

PART I – DEVELOP IMPLEMENTATION PLAN FOR CONSOLIDATED UP-SP CORRIDOR:

PART I MAJOR TASK SUMMARY

- 1 – Conduct Preliminary Planning and Analysis
- 2 – Conduct Funding Analysis
- 3 – Support Development of Data Required for Application to Regulatory Agencies
- 4 – Develop Necessary Agreements with Freight and Intercity Operators.

PART I, TASK 1 – CONDUCT PRELIMINARY PLANNING AND ANALYSIS:

- Develop and simulate operations plan (freight/passenger)
- Establish track configuration
- Determine clearance requirements
- Analyze electrification facilities requirements
 - Power supply and catenary
 - Communications and signals
 - Locomotives
 - Maintenance shops and service areas
- Analyze engineering for environmental issues to include environmental document preparation
- Develop unit costs
- Develop procurement and construction schedules

PART I, TASK 2 – CONDUCT FUNDING ANALYSIS:

- Provide capital and O&M cost estimates
- Determine allocation of capital and O&M costs, and revenue sources

PART I, TASK 3 – SUPPORT DEVELOPMENT OF DATA REQUIRED FOR REGULATORY APPLICATIONS:

- Route Data
- Preliminary Engineering Data
- Environmental Data
- Locomotive Specifications
- Financial Data

PART I, TASK 4 – DEVELOP NECESSARY AGREEMENTS WITH FREIGHT AND INTERCITY OPERATORS

- Investigate legal/institutional issues
- Property ownership, regulatory authority
- Joint use rights and agreements
- Grade separation requirements



PART II – IDENTIFY AND SELECT OTHER ROUTES:

PART II MAJOR TASK SUMMARY

- 1 – Define All Routes/Lines to be Considered for Electrification.
- 2 – Develop and Apply Criteria for Selection of Additional Candidate Lines
- 3 – Conduct Preliminary Planning and Analysis for Adopted Networks
- 4 – Identify and Quantify Regulatory Agencies' Requirements
- 5 – Analyze Alternative Fuel Solutions for Lines Not Selected for Electrification
- 6 – Conduct Funding Analysis
- 7 – Prepare Recommended Implementation Plan.

PART II MAJOR TASK DETAIL

PART II, TASK 1 – DEFINE ROUTES/LINES TO BE CONSIDERED FOR ELECTRIFICATION

- Assemble current and projected, traffic and emissions data.
- Submit list of cases to be considered to task force.

PART II, TASK 2 – DEVELOP AND APPLY CRITERIA FOR SELECTION OF ADDITIONAL CANDIDATE LINES

- Develop Criteria
 - Quantitative Criteria: emissions reduction per dollar invested; ton-miles per mile; passenger miles per mile; etc.
 - Qualitative Criteria: community impacts; operational impacts; environmental impacts; etc.
- Submit criteria to task force
- Apply Criteria: select additional lines to be electrified
 - Apply quantitative criteria to select lines
 - Re-evaluate selected lines using qualitative criteria
 - Submit list of selected lines to task force.

PART II, TASK 3 – CONDUCT PRELIMINARY PLANNING AND ANALYSIS FOR ADOPTED NETWORKS

- Develop and simulate operations plan (freight/passenger)
- Establish track configuration
- Determine clearance requirements
- Analyze electrification facilities requirements
 - Power supply and catenary
 - Communications and signals
 - Locomotives
 - Maintenance shops and service areas
- Analyze engineering for environmental issues to include environmental document preparation
- Develop unit costs
- Develop procurement and construction schedules

PART II, TASK 4 – IDENTIFY AND QUANTIFY REGULATORY AGENCIES' REQUIREMENTS

- Establish regulatory jurisdiction and contact.
- Identify affected/participating utility companies.

PART II, TASK 5 – ANALYZE ALTERNATIVE FUEL SOLUTIONS FOR LINES NOT SELECTED FOR ELECTRIFICATION

- Review development status of LNG, CNG and methanol as fuels for locomotive engines.
- Develop capital and operating costs relative to diesel baseline.
- Estimate magnitude of emission reductions resulting from conversion to alternate fuels.
- Calculate cost effectiveness of emission reductions.
- Give plausible earliest dates that alternative fuel locomotives could be put into service.

PART II, TASK 6 – CONDUCT FUNDING ANALYSIS

- Apply unit costs to develop project cost estimate
- Provide capital and O&M cost estimates
- Determine allocation of capital and O&M costs, and revenue sources

PART II, TASK 7 – PREPARE RECOMMENDED IMPLEMENTATION PLAN

- Schedules for agreements, design, procurement, construction and start-up.
- Capital, and operating and maintenance costs.
- Financial Plan
- Plan and schedule to comply with regulatory requirements.
- Submit comprehensive plan to task force.

SOUTHERN CALIFORNIA REGIONAL RAIL ACCELERATED ELECTRIFICATION PROGRAM

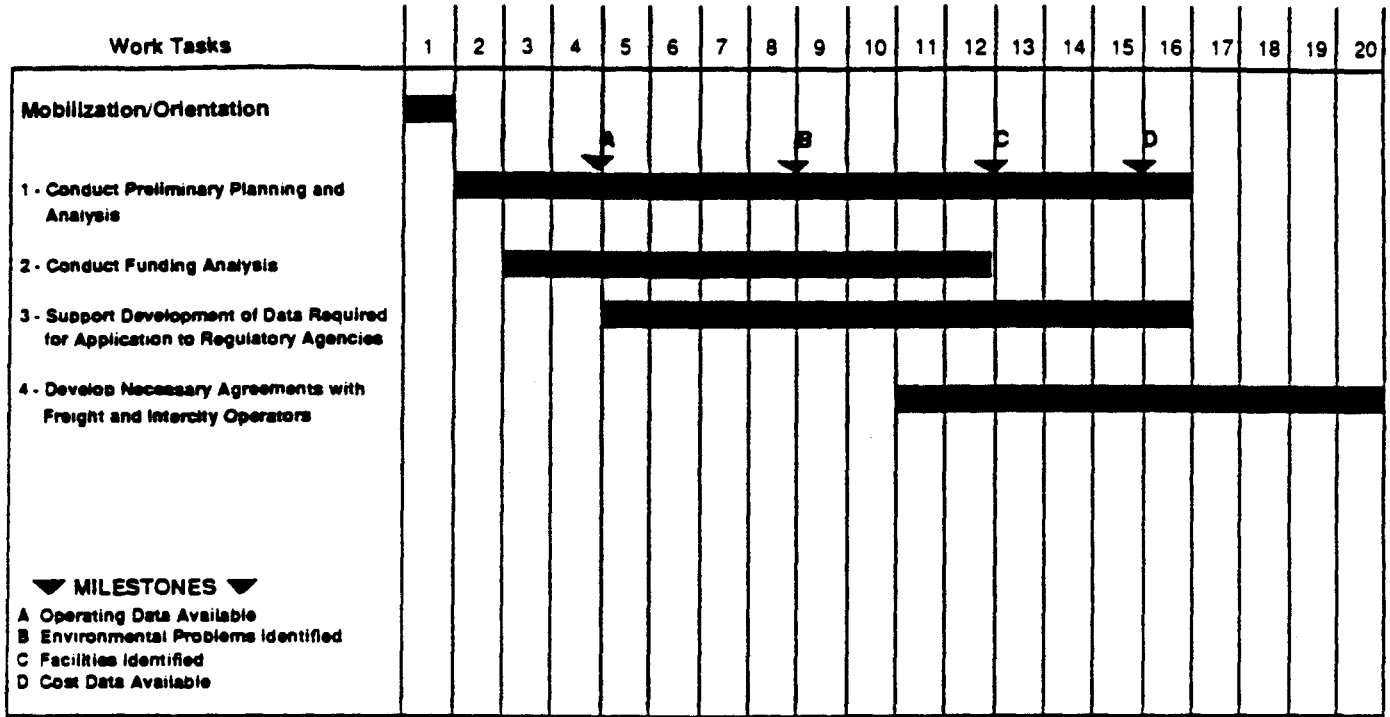
**Preliminary Schedule
And
Task Force Resources**



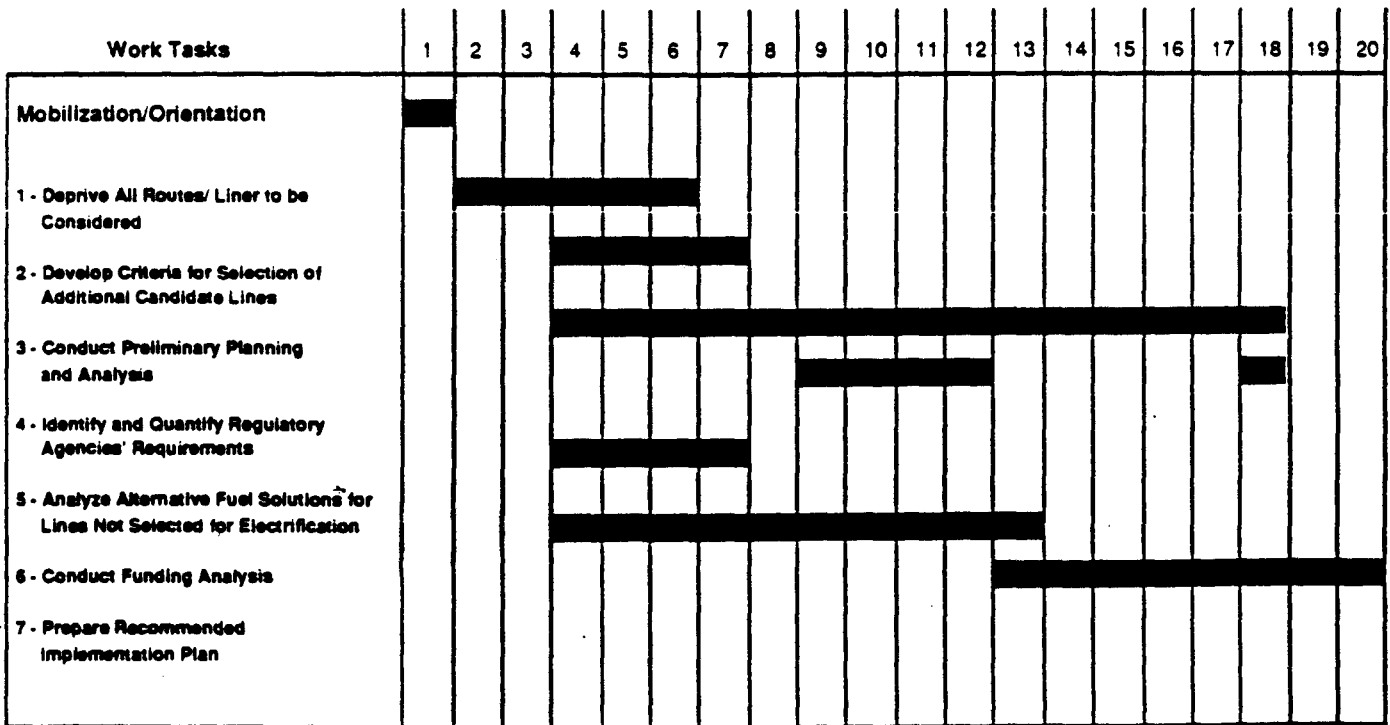
Task Force Meeting No. 1

Tuesday, September 24, 1991

**PRELIMINARY SCHEDULE
PART I - DEVELOP IMPLEMENTATION PLAN FOR CONSOLIDATED UP-SP CORRIDOR**
Week



**PRELIMINARY SCHEDULE
PART II - IDENTIFY AND SELECT OTHER ROUTES FOR ELECTRIFICATION**
Week



TASK FORCE RESOURCES (CONSULTANTS)

SCRRA

DeLeuw Cather & Co.

- Program Management
- Electrification System Planning/Design
- Environmental Analysis
- Train Control, Signal and Communication Design

Booz-Allen & Hamilton Inc.

- Operations Analyses
- Emissions Analyses
- Financial

Frederick R. Harris Inc.
STV/SSV&K

- Bridge and Structural Clearances
- Roadway and Track Design
- Signalling

LTK Engineering Services

- Motive Power and Electrification Technology

Southern California Edison

Morrison-Knudsen Engineers Inc.

- Electrification Facilities Design and Construction



NAME	TITLE	AFFILIATION	PHONE NO.	FAX NO.
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R.P. HOWELL	Project Manager	REC/SC/LLA	213 244 6386	213 889-1469
JOHN RINARD	CHIEF ENGINEER	SCRRRA	213 244-6738	" "
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Carol Gmen	Project Manager	SCS	(818) 302-9705	
David Leou	P.M.	SCRRRA/PRH	X 6151	
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Kenneth Koss	Senior Rate Expert	CAE PUC	213-620-2675	
James Boothe	Economic Advisor	CPUC	415-703-3103	
Ginger Gherardi	Executive Director	NETC	(805) 642-1591	
Genetha Edonis	Public Affairs Officer	RCC	(213) 744-6562	
Raf Szaizowski	Part Time Emp of City of C.B.	(213) 590 6139		
Veronica Kon	Staff Scientist / Natural Resources Advisor	City of C.B. (213) 842-1500		

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Delbert Miller	Executive Representative	AT&SF Rwy	213-889-7777	213-889-7728
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Gill Hicha	General Manager	Alameda Corridor Trans. Auth.	(213) 583-3080	(213) 583-3083
Mark Pisano	Exec Div.	SCAC.	213-236-1508	213 236-1525
BEN PRUETT	Local Govt Affairs Mgr.	TeleCom Company	213 6893714	213 689 2092
Jack Swift	Natural Gas Mkt. Dev Mgr		(213) 572-2120	?
Mike A. Neizemi	Planning Manager	SCAQM D	818 572-2100	818.571-7650
Pat Heyden	Deputy Ex. Officer	SCAQM D	714-779-1604	714-693-0588
Hank Wedow	Board Member	SCAQM D	818-575-6684	575-6818
Marijke Belcken	AP Spec	ARPs	714-975-5266	714-975-5614
ALBERT C. WITZIG	Proj. Mgr. Orange Co. Comm Rail	Fluor Daniel/ OCTA		
Charles C. Oldham	Assistant Director, Policy	Calif. Trans. Comm.	916-654-4245	916-653-2134
Tim Little	Coalition for Clean Air	Ex Director	(213) 4503196	(213) 399-0769

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News

SEPTEMBER 24, 1991

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LACTC TRANSPORTATION NEWS BUREAU
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FOR IMMEDIATE RELEASE

ELECTRIFICATION TASK FORCE MEETS TO PLAN CONVERSION OF RAIL TECHNOLOGY

The Los Angeles County Transportation Commission is aggressively pursuing an accelerated electrification program of freight, intercity, passenger and commuter rail lines in the Los Angeles basin.

The 1991 Air Quality Management Plan calls for the implementation of clean fuel technologies for public transit by the year 2010. However, the LACTC is looking for ways to accelerate that schedule considerably.

A task force comprised of the utilities, air quality agencies, environmental groups, freight railroads, transportation commissions and the Public Utilities Commission met for the first time September 24 to initiate a study to develop an electrification implementation schedule.

Neil Peterson, Executive Director of the LACTC, set the tone of the meeting by reminding the assemblage, "they were not there to engage in policy debate, but to prepare data on when and which rail lines can be electrified." The results of their findings will be reported to the California Transportation Commission early in 1992.

(MORE)

**ELECTRIFICATION TASK FORCE MEETS
TO PLAN CONVERSION OF RAIL TECHNOLOGY**

September 24, 1991

Page 2

First the task force is studying the electrification and consolidation of freight traffic onto the Union Pacific-Southern Pacific corridor parallel to the SR-60 and the I-10 freeways.

A second major task is the identification and selection of other rail corridors for electrification.

The task force also is responsible for identifying rail electrification funding.

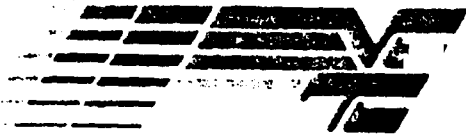
To comply with state legislation and the region's mobility goals, the newly created Southern California Regional Rail Authority comprised of the transportation commissions of Los Angeles, San Bernardino, Ventura, Orange and Riverside is committed to start the first three METROLINK commuter rail lines by 1992.

The first three lines will start with new diesel locomotives which are 25% more fuel and emission efficient than those currently in operation in other parts of the country.

The implementation of METROLINK service from San Bernardino, Santa Clarita and Ventura to Los Angeles by 1992, will greatly reduce air pollution and improve mobility for thousands of commuters who now drive more than 60 miles to work.

The diesel engines used in these first three lines could be replaced with electric engines in the future, or with any other clean air technology that the task force considers the most appropriate.

#



Item 10 (d)
INFORMATION

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September 23, 1991

**MEMO TO: VENTURA COUNTY TRANSPORTATION COMMISSION
10/4/91 MEETING**

FROM: GINGER GHERARDI *GG*

SUBJECT: RAIL ELECTRIFICATION UPDATE

As you are probably aware, there has been an on-going controversy regarding the issue of commuter rail electrification, specifically relating to the timing of rail electrification. While it is planned that all heavy and light rail operations be electrified by the year 2010, our commuter rail is scheduled to start operations with advanced diesel engines.

The Southern California Regional Rail Authority has begun a four month study by a task force to address all of the issues related to electrification of our regional rail network, which will continue to be a predominantly freight operation. The task force will meet for the first time on September 24, 1991.

The focus of the study will be to address technical, environmental, economic and schedule impacts associated with rail electrification. Other clean fuel technologies will also be addressed. The goal, based on forthcoming facts and assumptions, will be to determine a certain timetable for basin-wide electrification.

As a separate effort, the California Transportation Commission is holding a joint meeting with the South Coast Air Quality Management Board to discuss utility regulatory issues, financial issues, air quality issues and agencies' responsibilities related to rail electrification. The CTC is anxious to proceed and has exhibited little patience for delay while a technical study by the SCRRA is completed.

You will be briefed on the results of both meetings at the VCTC meeting.



The Valley

- Police Report
- Obituaries
- Letters
- Jack Anderson

Commuter rail may start on diesel

By Joseph Ascenzi
Staff Writer

LOS ANGELES — A five-county commuter rail system is so desperately needed it should begin next year with diesel engines, even though clean air standards would be better served by waiting for electrified rail, the executive director of the Los Angeles County Transportation Commission said Wednesday.

Neil Peterson told commission members that the system, which is scheduled to open in October 1992, would be delayed by six years if it were to wait for electrified rail.

"It would cost too much to electrify now, and we would

have to wait too long to start the system," Peterson said during a special workshop on commuter rail held before the commission's regular monthly meeting in the Hall of Administration, 500 W. Temple St.

Peterson said the Southern California Regional Rail Authority's decision to begin the system with diesel engines, then eventually sell them and convert the system to electric engines, was correct.

"There is a large resale market throughout the United States for diesel engines, so we don't think there will be a problem selling them when the time comes to do that," Peterson said. "We'll be able to sell them whenever we think the

time is appropriate."

Peterson said a task force has been formed to determine how best to convert commuter rail to electrification. That group, he said, is expected to complete its work by next January.

"I could give you a conversion date now, but it really wouldn't be a good date," he said. "That's up to the task force to determine, and that will take a few months."

Peterson's remarks were a direct response to criticism leveled against the commission and the authority earlier this month by Southern California Edison, which maintains the agencies are wasting money by

Please see COMMUTER / B2

COMMUTER

From B1

beginning the system with diesel engines.

Robert Dietch, vice president of research for the utility, questioned whether both bodies are committed to electrified rail, a charge Peterson dismissed.

"There is absolutely no question we're committed to bringing electrified rail to the five counties," Peterson said of the system, which will eventually link Los Angeles, San Bernardino, Orange, Riverside and Ventura counties. "The law says we have to have 90 percent of the system electrified by the year 2010, and that's what we're going to do."

Peterson said there is added incentive to have commuter rail operating by October 1992: The following month, he pointed out, state voters will decide whether to approve or reject a measure that would raise \$1 billion for transportation projects.

"We have to do something that shows results, so it's very important that we keep the opening of commuter rail on schedule," he said.

Commuter rail funds OK'd despite questions about diesel pollution

By Randy Drummer
Daily Bulletin

LOS ANGELES — State transportation commissioners Wednesday approved \$42 million in funding for Southern California commuter rail, but not before criticizing the proposed use of pollutant-spewing diesel engines to pull trains.

The money, the second major allocation from statewide bond measures passed by voters last year, will pay for railroad property for the San Bernardino-to-Los Angeles commuter line and two others scheduled for startup next year.

The California Transportation Commission allocated more than \$41 million in February to purchase land for a maintenance facility near Union Station.

California will sell \$1 billion in bonds next month for rail and a variety of other public works projects. The state budget crisis has cut the amount of available state money, requiring counties to substitute their sales tax revenue to keep commuter rail on schedule.

Commissioners, meeting in Los An-

geles this week, questioned regional rail officials on various elements of the plan that calls for service through the Inland Valley by fall of next year.

Several were shocked by a Southern California Edison official's remark that noxious emissions from the first three diesel commuter lines would be akin to adding 12,000 cars to the road.

Diane O. Wittenberg, manager of business planning and electric transportation for SCE, said diesel trains put 250 times more pollutants in the air than electric systems.

Several commissioners called the revelations "horrible."

"I personally feel it's idiotic not to electrify commuter rail," said Commissioner Joseph Duffel.

Chairman William E. Leonard pointed out that air quality officials recently tightened smog controls to require such things as ride-sharing programs for high school students and buy-backs of old cars.

"While we're doing all this, we're going to put diesel trains in the (Los Angeles) basin? It just doesn't make

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Rail

/from A1

sense," Leonard said.

Richard Schweinberg, manager of electric transportation for SCE, said the utility could explore subsidizing the cost of an electric system through rate increases. Wittenberg said a system could be on line in two years.

The five-county regional rail authority, through the LACTC, has already placed a \$50 million order for diesel engines to run the three lines.

Linda Bohlinger of the Los Angeles County Transportation Commission said although local officials eventually want to convert to electricity, they also want to start commuter service on time.

"We believe it will take up to five years to implement and cost hundreds of millions of dollars we don't have," she said.

SATURDAY, JULY 27, 1991 / VC

Los Angeles Times

Electrification Would Delay Rail 7-10 Years, Officials Say

By CARLOS V. LOZANO
TIMES STAFF WRITER

If a proposed commuter rail line to link Ventura, San Bernardino and Los Angeles counties were electrified, as Southern California Edison has suggested, rail service could be delayed from seven to 10 years, Ventura County transportation officials say.

Moreover, electrification of the 130-mile commuter rail network would also add millions of dollars to its cost, said Ginger Gherardi, executive director of the Ventura County Transportation Commission.

The line is scheduled to be operational by November, 1992, without electrification.

"It doesn't make sense," Gherardi said. "It seems to me

that the most important thing right now is to get people out of their cars and into trains, instead of waiting 10 years."

A study commissioned by Edison determined that commuter trains pulled by Diesel locomotives actually would create more pollution than all of the vehicles they are projected to take off the freeways. The California Transportation Commission was given copies of the study at its meeting in Los Angeles last week.

The Edison study confirmed that, compared to cars, the commuter trains would emit 90% less of one class of smog components, reactive organic gases. But the Diesel locomotives would double the amount of another pollutant, oxides of nitrogen.

Gherardi said she has had a chance to review a portion of the study and is not convinced of its findings.

"Their position is somewhat distorted," she said. "The fact is that the trains will cut pollutants in half."

Ventura County Supervisor Vicky Howard, a member of the county transportation commission, said she has not seen the Edison study but also is skeptical of its conclusions.

"I'm surprised," Howard said. "I think we would almost have to do another study to make sure it's accurate . . . and not self-serving."

"It's pretty obvious," Gherardi said, why Edison would want the rail system to be electrified: It would be the line's main supplier of power.

But Richard Schweinberger, manager of electric transportation research at Edison, said the company believes

Please see RAIL, B5

VENTURA COUNTY

RAIL: Electrification May Cause 10-Year Delay

Continued from B1

that its study is accurate.

"The benefits of electric trains are cleaner air and more energy efficiency," Schweinberger said.

Edison plans to discuss the study's findings in detail with the Los Angeles County Transportation Commission and other government officials on Aug. 20, Schweinberger said.

The LACTC has been working with transit agencies in Ventura, San Bernardino, Orange and Riverside counties to put together a commuter rail network that will link the five counties.

Plans already have been approved for the first three segments to begin service in November of next year. Trains will run between Union Station in downtown Los Angeles to Moorpark in Ventura County, the Santa Clarita Valley and San Bernardino.

Schweinberger said Edison is "willing to explore the possibility" of sharing the cost of electrifying the 130-mile line linking the three

counties. Once Edison got the go-ahead from the state Public Utilities Commission, it would take at least 24 months to electrify the rail system, he said.

But Gherardi said that estimate is "hopelessly optimistic." She said it would take "seven to 10 years, at least."

Electric locomotives would cost about \$5 million each and take about five years to manufacture, compared to \$1 million to \$2 million for the Diesels that already are being built for the commuter line. The locomotives are expected to be delivered early next year.

The best solution, Gherardi and Howard said, would be to get the commuter trains running as soon as possible and electrify the system later.

"I don't think we should delay any of this," Howard said. "The sooner we start getting cars off the road the better off we're going to be."

Gherardi agreed. "I think all of us want the cleanest form of transportation possible, but I also think

that something has to be done about the traffic problem as soon as possible," Gherardi said.

"I think it's a little late to be coming in here at the 11th hour with a new plan when there is already a well-conceived plan to get service started by next year," she said.

Edison Says Diesel Trains Add to Smog

■ Transportation:

Utility's study says such engines are less beneficial than cars they replace. Company is lobbying county to electrify commuter rail lines.

By MARK A. STEIN
TIMES STAFF WRITER

Commuter trains pulled by diesel locomotives would create more pollution—twice the amount of one smog component—than all of the automobiles they are projected to take off the freeways, a study commissioned by Southern California Edison Co. asserts.

Local transit officials are skeptical of the report's assumptions and conclusions, which were given to the California Transportation Commission last week as part of an analysis of electric-powered vehicles.

They acknowledge that the report has given urgency to previously private negotiations between the utility and Los Angeles County Transportation Commission about electrifying 130 miles of commuter train lines the commission plans to open next year.

"The assumption always has been that the more cars you get off the road, the better off you are," said Richard Schweinberg, manager of electric transportation research at Edison. "Our study indicates this is not necessarily true" for all pollutants.

"What they've come up with flies in the face of what has been found in other cities . . . [where], on balance, diesel locomotives are far more beneficial than the cars they replace," said Richard Stanger, manager of commuter rail trains at LACTC. "Something is strange. Something is wrong and we have to find out what it is."

The state transportation com-

mission has asked Edison to meet with the county commission and other government agencies on Aug. 20 to review the study's findings and consider Edison's tentative offer to pay the \$80-million cost of electrifying the commuter rail network.

The LACTC, in cooperation with similar agencies in Orange, San Bernardino, Riverside and Ventura counties, is racing to buy old and marginal freight railroad tracks, upgrade them to passenger standards, and build stations in time to launch commuter service by November, 1992.

Three lines would radiate from Los Angeles Union Station to Moorpark in Ventura County, the Santa Clarita Valley and San Bernardino. Together, they are projected to carry 10,600 passengers a day.

It has been assumed that the lines would ease air pollution by taking a similar number of automobiles off the road. The Edison study confirmed that, compared to cars, the trains would emit 90% less of one class of smog components, reactive organic gases, or hydrocarbons. But the diesel-burning locomotives unexpectedly would double the amount of another pollutant, oxides of nitrogen.

"It would be like adding 11,000 or 12,000 cars to the road" in terms of that pollutant, said Schweinberg. "We were just as surprised as the next guy."

Oxides of nitrogen put a bourbon tint and fine acidic particles in the summertime air. They also react with hydrocarbons to form ozone, an invisible, sharp-smelling gas that causes lung damage.

Stanger said he still believes that the diesel locomotives will prove cleaner than cars.

"We don't think those [Edison] numbers are correct," he said. "Our locomotives have specifically been designed to be more fuel efficient—and therefore put out fewer pollutants—than other locomotives."

Bypass diesel, area rail agency advised

By Joseph Ascenzi
Staff Writer

LOS ANGELES — The agency responsible for bringing commuter rail to the greater Los Angeles area should bypass diesel engines and start with electrified rail engines, a spokesman for the Southern California Edison Co. said Tuesday.

Robert Dietch, vice president of engineering research for the utility, said the Southern California Regional Rail Authority's plan to begin with diesel engines and gradually convert the Los Angeles-to-San Bernardino system to electrified rail makes no sense, given the area's chronic air pollution and other environmental problems.

"It's always been our position that with the air quality as bad as it is in Southern California, it seems to be a bad idea to start with diesel engines," Dietch said during a workshop on rail and transit electrification conducted by the California Transportation Commission.

"If you're going to electrify the line, as the rail authority has said it's going to do, it seems like it would be a sad mistake to start with diesel engines.

"All you're going to do is lose money."

During a 30-minute presentation before the commission, Dietch presented a chart showing other countries, including Japan and Sweden, that have electrified 99 percent of their rail systems.

"It makes no sense that the rest of the world is headed toward electrified rail while we in Los Angeles, with the dirtiest air

anywhere, are headed toward diesel," Dietch said. "I think we're definitely headed in the wrong direction."

But Dana Reed, one of Orange County's representatives on the rail authority, said starting with electrified commuter rail would mean postponing the system's 1992 start date by four to six years.

"We are absolutely, totally committed to electrifying the commuter rail system," Reed said of the system, which ultimately will link Los Angeles, Orange, Riverside, San Bernardino and Ventura counties.

"The system is designed to convert to electrification," Reed continued. "The diesel engines are short-term, a way to get the system started, which we have to do."

Reed, who faced down strong criticism from several commission members, said the immediate benefit of commuter rail will be cutting 18,000 automobile trips a day, enough to eliminate an estimated 528 tons of pollutants a year.

"The only question about electrification is, how much will it cost and who is going to pay for it," Reed said.

Stephanie Brady, spokeswoman for the Los Angeles County Transportation Commission, defended using diesel engines before converting to electricity, saying electrification would cost too much now.

"One thing that Southern California Edison doesn't talk about is how much it will cost to electrify," Brady said.

"We have to get commuter rail started."



AUGUST 20, 1991

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FOR IMMEDIATE RELEASE

DIESEL COMMUTER RAIL WILL REDUCE 92% OF AIR POLLUTION

LOS ANGELES -- Southern California's new commuter rail system, on track for launch October 1992, will drastically reduce auto emissions.

"As drivers switch to commuter rail, the number of cars that will be removed from the freeways will result in an almost 90% emission-reduction at the start of service," reported Dana Reed, an Orange County representative of the Southern California Regional Rail Authority (SCRRA), at a workshop today of California Transportation Commissioners.

Reed said that the immediate benefits of using the new diesel-powered trains will be the elimination of 18,000 car trips per day and 528 tons of pollution per year.

Research conducted by Southern California Edison revealed that by the time a full seven-car train is operating, pulled by low-emission diesel locomotives, it will eliminate 92% of the major air pollutants generated by automobiles--including a 98% reduction in Reactive Organic Gases (ROG), a 31% reduction in Oxides of Nitrogen (NOx) and a 99% reduction in Carbon Monoxide (CO).

(MORE)

DIESEL COMMUTER RAIL WILL REDUCE 92% OF AIR POLLUTION

August 20, 1991

Page 2

The new diesel locomotives that will be put into operation on the Southern California commuter rail lines will be 25% more fuel and emission efficient than those currently in operation. They will be the first of this kind to be introduced in the United States.

Neil Peterson, Executive Director of the Los Angeles County Transportation Commission (LACTC), told the workshop that in conformance with the 1991 Air Quality Management Plan, an Alternative Fuels and Power Task Force will be created to explore all clean air options for commuter rail.

Robert Dietch, Southern California Edison Vice-President said that "Edison is looking forward to working with the CTC, LACTC, the California Public Utilities Commission, and others to form a creative partnership that will work together to make electrified commuter rail a reality as soon as possible."

"In addition to electrification, the freight rail operators, which will account for more than 90% of diesel emissions in the basin, have been studying lower emission technology for a number of years," said Jacki Bacharach, Chairwoman of the SCRRA. It is important to remember that commuter rail trains share tracks with freight operators so their participation in this task force is vital."

The SCRRA strongly supports using the low-emission, diesel-powered trains at this time. The SCRRA, comprised of representatives from the counties of Los Angeles, Orange, San Bernardino, Riverside and Ventura, is responsible for developing the region's planned commuter rail system set to begin operating in 1992.

(MORE)

DIESEL COMMUTER RAIL WILL REDUCE 92% OF AIR POLLUTION

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"At the present time, diesel technology offers more immediate air quality benefits than electric technology because it can be implemented at once," said San Bernardino County Supervisor Larry Walker. "If we were to begin implementation of an electrified system it would delay the start of much-needed commuter rail service by at least four to six years."

"In addition, rail electrification may not be cost effective in the short term," said Jacki Bacharach of the SCRRA. "At this time it would cost an additional \$715-million to convert to electric technology while adding only a 10% air improvement over the diesel technology," Bacharach said.

"Southern California is strangling on pollution and congestion caused by automobiles," said Neil Peterson. "The very best way for an electric company like Southern California Edison to prove genuine public interest would be to help finance the use of electricity to the commuter rail system. Perhaps they can work through the State Public Utilities Commission to provide incentives for electrification so they, Edison, can make this affordable now instead of later."

The South Coast Air Quality Management District also supports further study to use electrified commuter rail service as a measure to reduce vehicle miles traveled by single occupant drivers.

Henry Wedaa, SCAQMD's Vice-Chairman, said, "as long as we are satisfied that there is an overall reduction in air pollution by starting commuter rail service now using the new, low-emission diesel technology, the AQMD can support the Regional Rail Authority's plan to commence service as soon as possible. But, it is extremely important that the task force

(MORE)

DIESEL COMMUTER RAIL WILL REDUCE 92% OF AIR POLLUTION

August 20, 1991

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undertake the study of all clean-air technology to determine the possibility and best staging of implementing other systems. We must determine when diesel engines are to be phased out and replaced with other, even cleaner technologies."

Operation of diesel-powered commuter rail will greatly enhance Southern California's air quality," said Dana Reed. "Although, at the outset of the service the NOx component of auto emissions will increase 16.4%, as ridership increases and more train-cars are added, the NOx emission will be reduced by 31%. But from the start, there will be a reduction in overall air pollution once commuter rail starts operating."

The Alternative Fuels and Power Task Force will first meet within the next few weeks and will include representatives from the SCRRA, freight railroads, electric and gas utilities, Amtrak, and member counties, the California Transportation Commission, the Public Utilities Commission, the California Air Resources Board and the South Coast AQMD.

(MORE)

DIESEL COMMUTER RAIL WILL REDUCE 92% OF AIR POLLUTION

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**TEN YEAR NET CUMULATIVE EMISSIONS BENEFIT
OF SCRRRA PROPOSED COMMUTER LINES
1992-2001**

ROG TONS/10YEARS	NOx TONS/10YEARS	CO TONS/10YEARS	TOTAL TONS/10YEARS
700	120	8,300	9,120

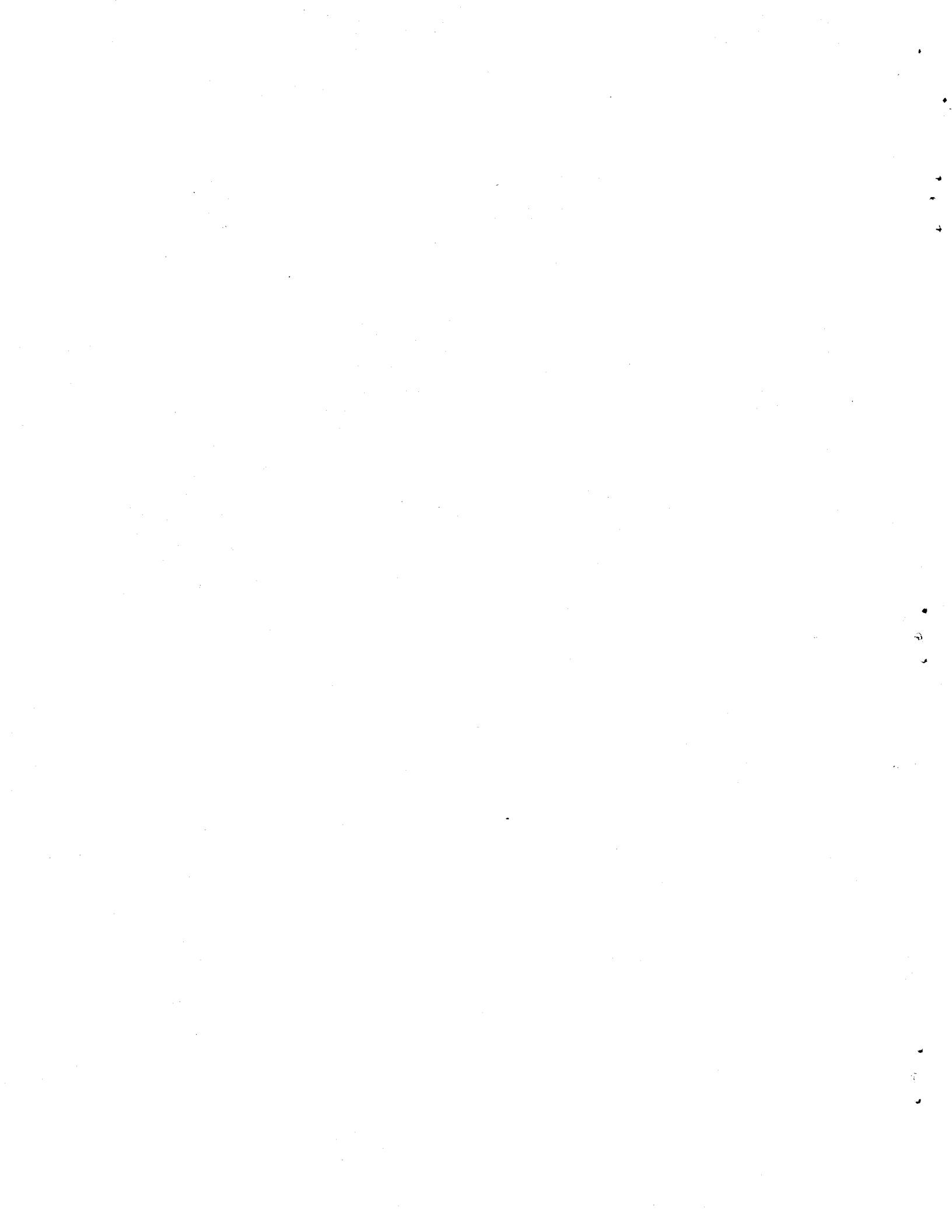
**ELECTRIFICATION OF THE THREE INITIAL COMMUTER RAIL LINES* BY 1998
WOULD ONLY RESULT IN THE FOLLOWING EMISSIONS BENEFIT THROUGH 2001:**

ROG TONS/4YEARS	NOx TONS/4YEARS	CO TONS/4YEARS	TOTAL TONS/YEAR
16	252	32	300

*Los Angeles - San Bernardino
Los Angeles - Santa Clarita
Los Angeles - Moorpark

Assumptions:

- Automobile emission rates will improve as required by CARB
- Locomotive emission will improve as currently proposed by CARB and manufacturers
- Automobile vehicle occupancy will reach California Clean Act requirements
- Commuter rail patronage will increase at least 10% per year



Plan for Diesel Trains Runs Into a Cloud of Criticism

■ **Mass transit:** Engines would create more air pollution than they would eliminate at first, officials concede. But they would serve until electrified lines are ready.

By MARK A. STEIN
TIMES STAFF WRITER

Diesel commuter trains would initially create more of one type of pollution than all of the cars they would replace, transportation officials conceded Tuesday, but they said the trains would slash pollution overall and are an important interim step until rail lines can be electrified.

The grudging and heavily qualified concession was made before the California Transportation Commission, which is reconsidering whether to let Southern California officials use money from voter-approved bonds to buy diesel engines for three commuter lines slated to open next year.

The commission met in Los Angeles to consider assertions by Southern California Edison that a plan by the Southern California

Regional Rail Authority to begin commuter train service between Los Angeles and Ventura County, as well as the Santa Clarita Valley and San Bernardino, could worsen smog.

Among the options considered were approving the use of diesel locomotives, regardless of the pollution; approving diesels only until virtually pollution-free electric trains are acquired, and postponing the start of service for at least four years while wiring hundreds of miles of track for electric trains.

"When we only have four cars [in each train], diesels will increase NOx [nitrogen oxides] emissions," said Dana Reed, an Orange County representative on the regional rail authority, which also includes members from Los Angeles, Riverside, San Bernardino and Ventura counties.

Please see COMMUTER, B8

For the Record

Trial date—A story in The Times Aug. 18 incorrectly stated the date for the trial of Korean-American grocer Soon Ja Du in the fatal shooting of Latasha Harlins. The trial is scheduled to begin Aug. 26 in Compton.

COMMUTER: Diesel Engines' Use Criticized

Continued from B3

But, he added, those figures could be turned around quickly if ridership grows fast enough.

In the meantime, Reed said, even the modest service scheduled to start a year from October could remove as much as 525 tons of pollution annually from the South Coast Air Basin, most of it in the form of poisonous carbon monoxide.

Compared to an equivalent number of cars, the commuter trains also would save each year 34 tons of reactive organic gases, one of two primary components of ozone, the major constituent of smog, transportation officials said. The only hitch is NOx; the trains would create 11.7 more tons of this ozone component than would the cars they replaced.

Eventually, if ridership grew as expected, transportation officials

said their trains could add more passenger cars, allowing them to take more automobiles off the freeways and produce a considerable net savings in pollution.

But critics were unmoved by the commuter train official's assertions. They noted that Reed's own report concludes that electric trains would result in far greater pollution savings—even after factoring in the pollution created to generate electricity.

"The world is not going to respect a diesel installation in Los Angeles with air pollution as it is," asked Robert Dietch, vice president of engineering research at Southern California Edison.

"Why don't we have electric trains operating in the smog capital of the United States, where they can have an immediate and dramatic impact?" asked Henry We-

daa, vice chairman of the South Coast Air Quality Management District. "Is this good public policy? I don't think so."

But Wedaa, along with other critics, urged the state transportation commission to approve the diesel trains anyway, if only as an interim step while electric locomotives are ordered and overhead electrical wires are strung over the several hundred miles of track to be used by commuter trains.

Such electrification would cost between \$600,000 and \$700,000 a mile, said Willard Weiss, a consultant with the private contractor Morrison-Knudsen Inc. Installing poles, wires and electrical substations while diesel-powered trains continued rolling over the tracks would add \$100,000 a mile to the cost and several years to the schedule, he said.