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VOL. 48, NO. 9 **September 2010**

OMNITRANS (OT)

SAN BERNARDINO: Beginning with the September 2010 Service Change Program, **OT** inaugurated its new *OMNIGO,* Your Hometown Shuttle, three new local circulator routes. Using 16-passenger cutaways and fixed route fares, *OMNIGO* will permit residents of Yucaipa, Grand Terrace and Yucaipa to have access to major area destinations.

All lines (308/309-YUCAIPA, 325-GRAND TERRACE and 365-CHINO-CHINO HILLS) will operate daily.

308 is a counterclockwise loop while 309 runs clockwise with one van on each, operating every half hour between 600AM and 830PM.

Line 325 uses one van and operates every 70 minutes between 515AM and 815PM, replacing a portion of former **RIVERSIDE TRANSIT AGENCY** Line 25-RIVERSIDE-LOMA LINDA *(WT 3/10).*

Using two vans, 365 runs hourly 500AM to 1100PM between Chino Transit Center and Chino Hills City Hall, also serving Los Serranos and, on selected trips, Chino Hills High School and replaces portions of Line 65-CHINO HILLS – MONTCLAIR.

Beginning at the new Yucaipa Transit Center, Line 308 travels via 5th, County Line, Bryant, Wildwood Canyon, California, Avenue B, 2nd and Yucaipa to 5th. Line 309 travels the reverse.

Line 325 begins at the VA Hospital via Barton (deviating along Mount Vernon to the Senior Center), Michigan and looping via Flynn, Walker and Center to Michigan.

From the Chino Transit Center, Line 365 operates via Chino, Benson, Schaefer, Oaks, College Park, Central, Soquel Canyon, Yorba, Bird Farm, Valley Vista, Pipeline, Chino Hills and Peyton to Grand (City Hall).

OMNIGO is operated by *FIRST TRANSIT, INC.* as part of the Paratransit (*ACCESS* and *OMNILINK)* contract with Ford Econoline/El Dorado Aerotech 600-series cutaways in a scheme with modified paint and **OT** graphics *(WT 3/10).*

Also added to that contract were Saturday operations of Lines 20-FONTANA LOCAL and 29-BLOOMINGTON-VALLEY BLVD-KAISER *(Ed. Note - this change caused the Amalgamated Transit Union to file a grievance over meet and confer issues).*

Frequency changes some on weekdays and others on weekends, were made on Lines 1, 5, 10, 11, 15, 20, 22, 63, 80, 83 and 215.

Weekend hours were dropped on 67-MONTCLAIR-FONTANA VIA BASELINE and 81-ONTARIO MILLS-CHAFFEY COLLEGE.

Weekend service on 82-RANCHO CUCAMONGA-FONTANA-SIERRA LAKES was extended to the Summit-Beech Loop while weekend operations west of Mulberry to Rancho Cucamonga were dropped.

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PUBLIC UTILITIES COMMISSION (PUC)

SAN FRANCISCO: Below are applications before and decisions of the California Public Utilities Commission:

DECISIONS

Zahid Chaudary dba ABC SHUTTLE was granted authority (PSC-20431) to operate as a PSC between points in Marin, San Francisco, Alameda, Contra Costa, Solano, San Joaquin, San Mateo and Santa Clara Counties and Bay Area airports and to establish a Zone Of Rate Freedom.

CABANAS XPRESS, LLC granted authority to operate as a passenger stage on an on-call, county to county basis between the Counties of San Diego, Orange, Riverside, San Bernardino, Los Angeles, Kern, Fresno, Sacramento, Alameda, San Francisco, Santa Clara and Monterey and as a door-to-door shuttle between points in San Bernardino, Riverside, Los Angeles Counties and area airports and harbors and to establish a ZORF.

Manjit Singh dba ARROW AIRPORTER granted authority to operate as PSC between points in Solano, Marin, San Francisco, Alameda, Contra Costa, San Mateo and Santa Clara Counties and Bay Area airports and to establish a ZORF.

FOUR STAR TRANSIT, INC. was granted PSC-24192 authority to operate as an on-call, door-to-door service between the City of San Diego, San Diego Airport, San Diego Cruise Ship Terminal and points in the Counties of San Diego, Riverside, Orange and Los Angeles and to establish a ZORF. *FST* has previously held a charter party carrier certificate (TCP 24192-B) since October 2008.

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ISSN 1552-8604
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"PAGES FROM THE PAST"

(Headline stories or other news items from past issues of WESTERN TRANSIT as we relive transit history)

SEPTEMBER 2005 – Former independent fixed route and paratransit systems in Butte County merged - CHICO AREA TRANSIT SYSTEM, BUTTE COUNTY TRANSIT, OROVILLE AREA TRANSIT SYSTEM, CHICO CLIPPER, PARADISE EXPRESS and the OROVILLE EXPRESS.

SEPTEMBER 2000 – LADOT started two NEW lines, DASH/NORTHRIDGE and DASH/HOLLYWOOD/ WILSHIRE along with reroutings/extensions to DASH/ SOUTHEAST and DASH/HOLLYWOOD. Ground was broken by the Port Of Los Angeles for a new Waterfront RED CAR Line, expected to replace portions of the SAN PEDRO ELECTRIC TROLLEY.

SEPTEMBER 1995— Public transportation began in Lodi with the start up of **GRAPE LINE.** The **GL** system includes four Monday-Saturday routes and daily general public Dial-A-Ride.

SEPTEMBER 1990 – The second phase of **INLAND EMPIRE CONNECTION,** assumption of former **SCRTD** Line 496-LOS ANGELES-RIVERSIDE-SAN BERNARDINO, took place on August 20th with creation of **IEC** Lines 110 and 496.

SEPTEMBER 1985 – YELLOW AND PINK BUS LINES began operating new service between San Diego and San Ysidro via National City and Chula Vista along an alignment similar to the original **SAN DIEGO TRANSIT CORP.** Line 32.

WT STAFF FOR THIS MONTH

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RIVERSIDE TRANSIT AGENCY (RTA)

RIVERSIDE: **RTA** implemented a number of changes on September 12th including serving the newly opened Corona Transit Center.

12-CALIFORNIA-JURUPA-NORTH MAIN was extended from Galleria At Tyler to Pierce and Sterling replacing Line 14-INDIANA which was combined with the former 25-LOMA LINDA.

The new 14 travels from Galleria At Tyler along Tyler, Indiana, Brockton, University (serving the Downtown Terminal Dock 2), Iowa, Center, Michigan, I-215, I-10, Anderson and Barton to the Pettis VA Hospital. A 70-minute all day headway is offered daily.

Line 15-MAGNOLIA AVE--ARLINGTON AVE was extended from The Galleria via Tyler, Indiana, Pierce, looping via Magnolia, Merced and Sterling.

Lines 3-CORONA-NORCO, 206-TEMECULA-LAKE ELSINORE-CORONA and 216-RIVERSIDE-THE VILLAGE AT ORANGE were all rerouted to serve the newly opened Corona Transit Center near Grand & Main and across from the METROLINK Station.

Line 216 (former 149) now serves Riverside Downtown Terminal Dock 4 instead of the Fairmount Blvd stop *(**OT** Line 215 is now also inside, at Dock 8).*

On weekdays, the morning schedule includes three round trips on an even 75-minute headway and the afternoon schedule has four trips on an even 80-minute headway. The weekend schedule of four round trips continues.

SANTA MONICA'S BIG BLUE BUS (BBB)

SANTA MONICA: The BEACH RIDE returned this summer *(WT 08/09)* on a different route and schedule, but still designed to travel to and from the Annenberg Community Beach House.

Service operated on Mondays only between July 12 and August 30. Beginning at 1000AM at Pico and Virginia, the bus ran hourly until 500PM making stops along Pico to Ocean Avenue, then non stop to the Beach House. Return trips served the same stops.

The City of Santa Monica has awarded NABI a five-year contract for the immediate purchase of nine CNG powered, model 40-LFW buses with options for 49 more over the life of the contract. These buses, purchased in part with Federal American Reinvestment and Recovery Act (ARRA) economic stimulus funds, will replace nine diesels in the current fleet.

This purchase, along with an order for 16 sixty-foot articulated CNGs (due spring 2011) recently awarded to NABI, will cause the **BBB** fleet to be totally alternative fuel, a mixture of CNG and LNG units.

Fares were increased on August 29. The Regular and Student Local fare is $1.00, the Express is $2.00. The Senior/Disabled/Medicare fares are 50 cents/$1.00. The cost of transfers is 50 cents/25 cents.

BBB Day, 13 Ride (for the price of 12) and 30 Day Passes are available. They are valid on local lines and, with an upgrade, on express lines.

BBB continues its policy of not honoring either **MTA** nor **METROLINK** passes.

CAMARILLO AREA TRANSIT (CAT)

CAMARILLO: The Camarillo City Council selected *MV TRANSPORTATION, INC.* as the city's new contract operator beginning in mid August. This is a one-year contract with two, one-year options to operate both the one fixed route, three bus **CAT** and the Dial-A-Ride systems.

Camarillo is the third Ventura County contract for *MV,* the other two **THOUSAND OAKS TRANSIT** and **GOLD COAST TRANSIT** Paratransit in Oxnard.

SAN PEDRO RED CAR LINE (SPRCL)

SAN PEDRO: The Los Angeles Board of Harbor Commissioners recently awarded *HERZOG TRANSIT SERVICES* (of St. Joseph, Missouri) a three year, $3.7 million contract to operate and maintain the 1.7 mile long route, three railway car system that travels through the San Pedro waterfront area.

HTS will provide certified locomotive engineers to operate and inspect the trolley line.

Although no funding currently exists for any expansion ideas, current plans for eventual expansion of **SPT** continue. Most recent ideas include—double tracking the current route, building low ground platforms for new low floor cars, adding traffic lights and aligning the track along Sampson Way.



Future plans would extend the line to Cabrillo Beach and the site of the future cruise ship terminal, linking the waterfront to an in-street system in downtown San Pedro most likely including a loop track along Fifth as far as Pacific or Gaffey.

ORANGE COUNTY TRANSPORTATION AUTHORITY (OCTA)

ORANGE: The Fall Shake Up is scheduled for October 10th and will include a number of reroutings to improve efficiency or assist in transferring between buses.

The Anaheim Hills turn around loop of Line 30-ORANGETHORPE has reverted to its pre construction loop of Orangethorpe, Imperial, La Palma, Fairmont, Fairmont Connor and Esperanza to Imperial.

Line 76-MAC ARTHUR BLVD will be realigned in Newport Beach to travel along MacArthur, Jamboree, Bison, MacArthur and Bonita (allowing an easier connection with Line 79-CULVER DRIVE).

Lines 79 and 213-BREA-IRVINE EXPRESS will now operate on the campus at University of California, Irvine (UCI) rather than only along Campus and University.

Line 83-LAGUNA HILLS-DISNEYLAND will be realigned to travel on Manchester southbound and Anaheim Way northbound (streets that act as freeway frontage roads) between Katella and Orangewood, then return to the Santa Ana Freeway (I-5) to more conveniently serve the Ponderosa Park neighborhood of Anaheim.

SAN FRANCISCO MUNICIPAL RAILWAY (MUNI)

SAN FRANCISCO: Beginning September 4th, the SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY which operates **MUNI**, restored 61 percent of the service reductions from last May using funds from increased **MUNI** efficiencies with additional one-time funding from the SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY and the METROPOLITAN TRANSPORTATION COMMISSION.

Service includes restoration of Owl service every 30 minutes except for 108 that continues every 45 minutes, restoration of night end times for all community routes except 39-COIT TOWER and many local and rapid routes, added capacity on 13 weekday and 3 weekend lines and restoration of evening frequency on 9 lines.

The Transport Workers Union Local 250-A charged **MUNI** with unfair labor practices and asked the California Public Employment Relations Board to impose an injunction to stop **MUNI** from adding service.

The CPERB is a quasi-judicial administrative agency that regulates collective bargaining statues covering public employees in the state.

TWU charged management had failed to properly "meet and confer" over the proposed scheduling changes and other terms of employment, such as forcing up to nine union representatives to resume their driving duties.

The CPERB Board voted not to force **MUNI** to reverse its service restorations and, despite concerns of an employee boycott, on September 7th nearly all of the service was operating as planned.

The long push for **MUNI** reform continues, but with no quick fixes in sight. Many reforms have focused on who should control the transit system. Conventional wisdom says that for riders to see change, the system needs to have independence and be shielded from politics.

Measures originally scheduled for the November 2010 ballot intended to give the Board of Supervisors more say over service reductions and appointments to the MTA Board have been removed following agreement between Mayor Gavin Newsom Supervisors President David Chiu to create a task force to identify ways to restore service and to study the governance structure.

In the past 11 years, voters have twice approved **MUNI** measures, but Chiu says that more reform is needed.

MUNI employees will soon have to pay $80 a month to park their private autos at all **MUNI** facilities. Previously, all parking was free. This charge will generate about $3.5 million annually for the cash strapped agency and is one of a number of methods **MUNI** is attempting to raise money to support operations.

GOLDEN GATE TRANSIT (GGT)

SAN RAFAEL: A NEW route, 101X-SANTA ROSA-SAN FRANCISCO EXPRESS was inaugurated this month.

There are two morning southbound trips (610AM and 743AM) and one afternoon northbound (247PM) each weekday.

Santa Rosa stops include Piner & Industrial and the Transit Mall, then Rohnert Park Expressway Park & Ride, Petaluma Fairgrounds, Downtown Petaluma and then non-stop to San Francisco.

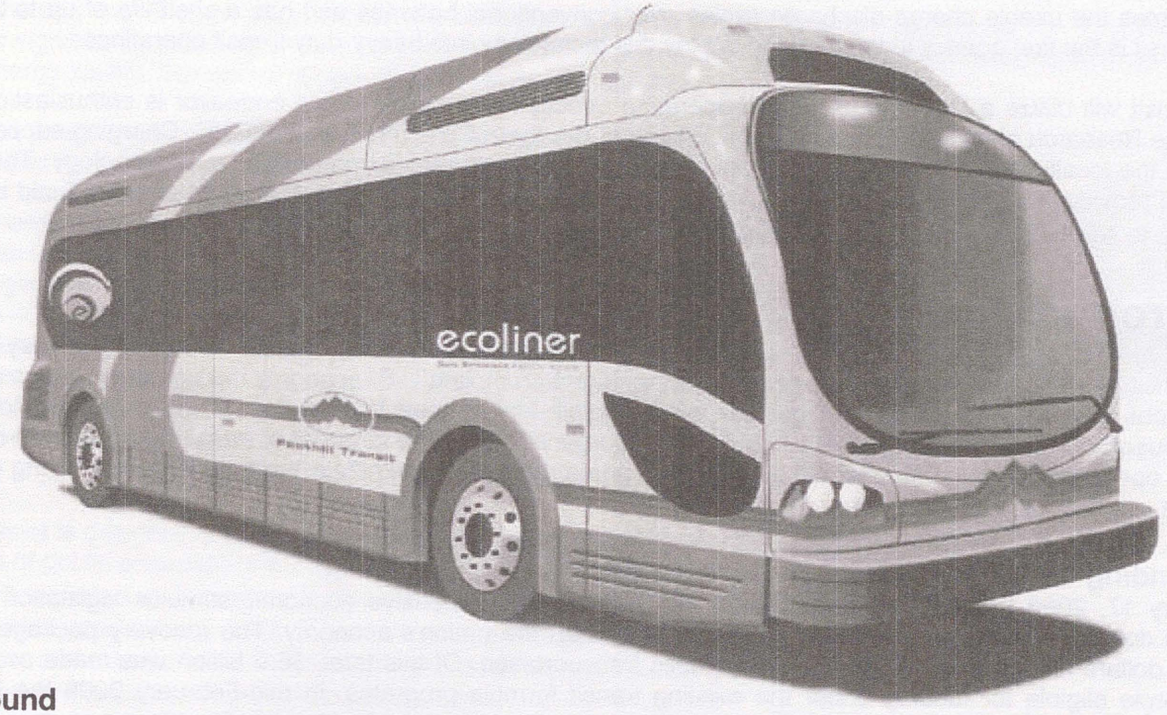
AMERICAN CANYON TRANSIT (ACT)

AMERICAN CANYON: **ACT,** a/k/a/ THE DUCK, one of the several systems in Napa County, has added a new morning and afternoon route, primarily to serve the newly opened American Canyon High School.

The 20-minute loop offers trips at 755AM, 822AM and 340PM using one full size bus to complement the 90-minute one way city circular loop operated between 730AM and 555PM with cutaways.



Foothill Transit's Ecoliners



Background

On February 19, 2009, the Executive Board authorized the Executive Director to implement an electric bus demonstration project and on April 24, 2009 approved a unique electric bus project utilizing in-route fast charging and renewable energy supplies through an agreement with bus manufacturer Proterra of Golden, Colorado, for the purchase of three 35' fast charge electric buses and two chargers. The Ecoliner project is among the most environmentally conscious projects in the transit industry today and is garnering considerable interest domestically and internationally. Foothill Transit's experience is setting the standard for the development of many similar projects.

After discussions with staff of the City of Pomona, it was determined that the best location for the installation of the chargers was the Pomona Transit Center. Although the contract with Proterra requires Proterra to provide the chargers, the civil construction of the charging station and related installation of electrical infrastructure is not covered under the Proterra contract.

In October 2009, Foothill Transit entered into a contract with AP& T for design services related to the design of the charging station and new and existing infrastructure required to support the chargers.

Executive Summary

As part of Foothill Transit's organizational commitment to innovation and environmental stewardship, Foothill Transit has committed over five million American Recovery and Reinvestment Act (ARRA) dollars to launch the Foothill Transit Ecoliner Electric Bus Demonstration Project (herein after referred to as the "Ecoliner.") Foothill Transit will deploy three initial Ecoliners, a 35' composite body electric transit bus that will leverage advanced lithium-ion battery quick-charge technology. The Ecoliner is manufactured by Proterra Inc, an organization that specializes in providing cost-effective solutions for clean transit. The Ecoliner reduces the demand for non-renewable sources of energy and reduces greenhouse gas (GHG) emissions from the transportation sector.

The Ecoliner bus offers:

- Zero Emissions
- Potential for 90% reduction in fuel costs
- Lower maintenance costs
- Ultra-quiet drive system
- 90% regenerative braking recapture

The Ecoliner is different than most battery drive vehicles where range is dictated by the number of batteries. The Ecoliner can operate on its route 24 hours a day, seven days a week on routes outfitted with fast-charge stations. The

key to this project is the utilization of the fast-charge battery; it will retain its energy reserve and charging profile from 8,000 to 25,000 charge-discharge cycles and can be quick-charged from a 10 percent to a 95 percent charge in ten minutes or less while the bus is at a layover. The Ecoliner battery utilizes Nanosafe technology, which laboratory tested at four to 10 times the usable charge-discharge cycles over conventional batteries and has a shelf life of up to 25 years. Foothill Transit is the first agency in the world to deploy this technology into heavy-duty transit operations.

Foothill Transit will utilize a fast-charge system operating directly from the grid. This endeavor is enthusiastically supported by the Research and Development (R&D) Division of Southern California Edison (SCE). Charging support will be provided by the locally-based firm AeroVironment, a pioneer in vehicle engineering and clean technology. This charge scenario will provide valuable fast charge information to evaluate battery performance and life, which will aid in Foothill Transit's aim to serve as a model and resource for other agencies who implement this technology.

Background

In February 2009, Foothill Transit did not hesitate to take advantage of President Obama's economic recovery program. Foothill Transit anticipated that legislation, designed to restore a crumbling U.S. economy through the creation and preservation of jobs, was on its way. With lofty goals in mind, Foothill Transit knew that an electric bus project, deploying zero emissions buses in regular revenue service, would put the organization at the forefront of transit agencies with respect to sustainable operations. This venture would also provide prime avenues to stimulate the transit market during grim economic times.

ARRA Funding

On February 17, 2009 President Obama signed ARRA. This comprehensive economic stimulus legislation provided $789 billion dollars in spending and tax relief to help kick start the nation's economy. The recovery package included $8.4 billion dollars for new capital investment in public transportation. Of this total, $6.9 billion was made available for capital projects eligible for funding under the existing transit formula programs. In mid-February 2009 the Executive Board authorized the Executive Director to issue a notice requesting indications of interest from bus manufacturers relative to their capabilities to produce a composite body electric bus. Proterra, Inc was the only entity that responded and could offer a bus and the wayside fast charging equipment that fully meets the Foothill Transit requirements.

Prototype Born

In April 2009 Foothill Transit team members took the response from Proterra, Inc and optimistic knowledge of ARRA funding to the Executive Board and on that date, transportation history was made. Team members explained to the Executive Board that the project not only had the potential to reduce Foothill Transit's vehicle emissions, but would also have a relatively low operating cost. The potential estimated gasoline-gallon equivalent (GGE) cost of electricity to power a fully-electric bus is under $1.00. Foothill Transit is currently working with SCE to examine energy demand charges that have a negative impact on the low power cost. The plan is to develop a rate structure that addresses electric vehicle charging requirements. A fully-electric transit route will allow the investment of capital resources to offset ongoing operating expenses and will also have a positive environmental impact.

Comprised of four elected and one appointed member, the Foothill Transit Executive Board approved a $5.8 million contract with Proterra, Inc for Foothill Transit's ground breaking electric bus project. The entire Foothill Transit Executive Board seconded the motion in unison, a first in Foothill Transit's history.

Marketing Approved

In late 2009 the Foothill Transit Executive Board approved the name "Ecoliner" and subsequent branding report for the electric bus. The word "Ecoliner" is derived from the words "ecological" and "liner," a traditional transportation term meaning smooth and efficient. The name "Ecoliner" embodies the spirit of Foothill Transit's mission to improve the lifestyles of people in the region through its commitment to innovation.

Coach Numbers Determined

In reference to the visionary 1968 movie "2001: A Space Odyssey," Foothill Transit's Ecoliner coaches will venture slightly from the usual numbering scheme, highlighting their futuristic nature. The first three coaches will be numbered 2001, 2002, and 2003 and will not have the "F" traditionally assigned to Foothill Transit coaches. The "two thousand series denotes innovation and the commencement of a new era in transit operations.

The Bus

Innovation

This is the only transit technology to offer the combination of zero emissions at the tailpipe (by the way, there isn't a tailpipe!), a significantly reduced carbon footprint on a "well to wheel" basis, and the potential for elimination of fossil fuels as an energy source, compared to conventional diesel technology.



The Ecoliner's composite body is lightweight which results in significant energy savings and its nonconductive qualities make it the safest structure for an electric drive bus. The composite structure not only protects passengers, but it absorbs energy which lowers maintenance costs in the case of an accident. The energy-absorbing feature reduces exterior body damage, making minor damages negligible, comparatively. The Ecoliner seats as many or more passengers (35-40) while maintaining the Department of Transportation (DOT) 20,000 lbs per axle weight limit as compared most 40' buses due to its purpose built design using a small engine compartment. This shorter length has been engineered to reduce weight and make the vehicle more maneuverable and lighter in neighborhood environments.

Safety

The Ecoliner is designed with industry leading safety features allowing for the safest transport of public passengers in a quiet efficient manner, including:

- Crash and electrical resistant composite structure
- Widest temperature range and impact resistant energy storage (battery)
- Interior and exterior local and remote camera monitoring/recording system
- Redundant electrical and mechanical systems
- Limited hydraulic and fuel lines which reduces fire hazards
- Forward motion front door places passengers into driver's field of vision when exiting and crossing the bus
- Low center of gravity with independent front suspension for best in class handling
- Built in automatic fire sensing/suppression system
- Class leading all-wheel braking system with 200 brake horsepower (BHP) instant regenerative braking
- Anti-Lock Braking and Traction Control system

The composite structure contains the following benefits over a conventional steel body:

- Improved safety with crash resistant composite structure
- Di-electric body material eliminates potential for High Voltage Ground Transmission to the vehicle structure
- Less costly to maintain than conventional metal bodies; no corrosion
- 40%+ longer life
- 20-40% weight reduction

Noise Reduction

The zero emissions bus technology realized through the implementation of the Foothill Transit Ecoliner will result in a measurable improvement of air quality and thus the livability of communities in the South Coast Air Basin. In addition to short- and long-term economic benefits, this program will produce several intangible paybacks in terms of the community's standard of living. Clean and quiet, with a modem, attractive appearance, the Ecoliner will be welcome in the communities it serves.

The Ecoliner employs the following proven advanced components to minimize noise progression both interior and exterior to the vehicle:

No engine required for normal operation

- Only noise is drive train and electric accessories such as air conditioning, power steering and air compressor
- Air conditioning is roof mounted with variable speed fans directed vertically to minimize street noise

All electric accessories

- Power steering, air compressor, air conditioning, and cooling systems are all driven with variable speed all electric drives to allow for controlled output of all such systems to minimize noise while maximizing performance and efficiency

Suspended cradle mounting structure

- Composite unibody cushion mountings to the propulsion drive system minimizes noise transmission from rotating components to body
- The vibration physics of the composite body also act to further reduce any noise

Component Layout

- By designing a vehicle around the hybrid components, the Ecoliner is able to locate specific components in opportune places not typical to a conventional low floor bus model.
- Long absent rear window returns to the transit bus
- The electronics radiator is front roof mounted allowing for ram air cooling, reducing fan noise
- The hydraulic pump is located at the steering box thus minimizing hydraulic piping, reducing noise and hydraulic system failures

GPS-based controls

- Vehicle can monitor location through on-board global positioning system (GPS) hardware
- Can create geo-fenced locations! portions of routes where certain higher noise equipment (such as roof mounted cooling systems) can be controlled to operate at a lower maximum speed such as a hospital zone

Fuel Economy

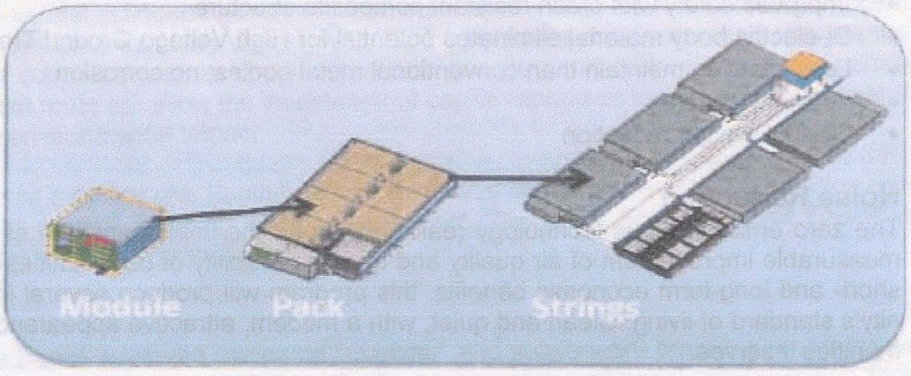
The Ecoliner has demonstrated unrivaled fuel economy and lifecycle costing as calculated by recent testing. In March 2009, Proterra Inc tested its Fuel Cell Battery Electric 35-foot transit bus at the Altoona test facility. (The Foothill Transit Ecoliner is virtually the same bus, without a fuel cell power plant). With a 30-mile range of the bus on battery power alone. fuel economy testing was conducted for the bus on simulated central business district, arterial, and commuter courses. The results were (diesel equivalent) of 21.35 mpg, 17.55 mpg, and 29.23 mpg, respectively. Considering that a conventional 40' diesel bus averages 3.8 mpg and current hybrid electric buses average 4.8 mpg, these findings indicate that the Ecoliner will result in a minimum of 400 percent increase in fuel economy.

The Foothill Transit Ecoliner fully complements state and federal efforts to achieve ambient air quality standards as funds dedicated to this project will fully support GHG reductions in the South Coast Air Basin. This project provides a vital link in helping California reach its environmental goals outlined in Assembly Bill (AB) 118, AB 32, and subsequently in Senate Bill (SB) 375. In testing, the Ecoliner bus' performance significantly exceeded the FT A goal to quadruple fuel efficiency of 40' transit buses to greater than 12 miles per diesel equivalent gallon by 2030.

Energy Storage System

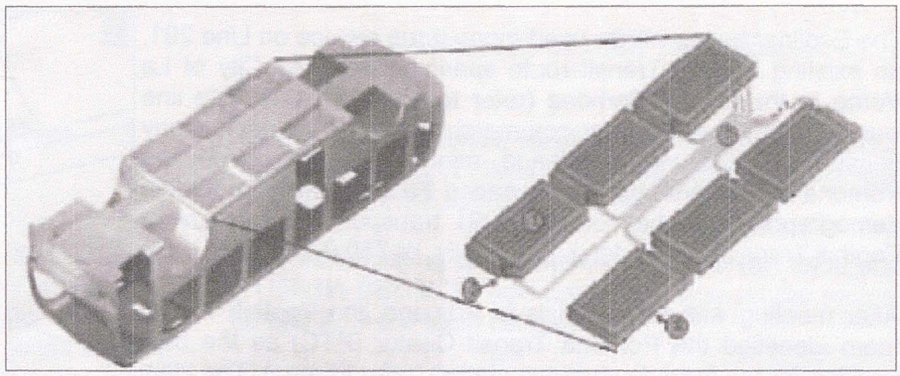
Battery Technology

The Ecoliner is configured with a 74 kWh TerraVolt™ energy storage system. The system includes eight battery packs, each of which houses eight, 1.1 kW-hr battery modules. The TerraVolt™ system is comprised of three parallel strings each containing two packs and sixteen battery modules for a total of 368 volts per string. Each of the parallel strings is independently fused and has a contactor that is controlled by the vehicle master control system. The modules include 10 serially connected 23.0 volt, 50 Amp-hr nano Lithium-Titanate cells.



The safety control system has multiple levels. Each of the 480 cells in the battery system is independently monitored by the (BMS) Battery Management System to ensure that every cell is operating within the specified voltage range. Additionally, each module has three separate temperature sensors to immediately detect any variance. The modules are constructed using high dielectric, high thermally conductive materials to ensure that the entire battery system maintains the proper temperature while maintaining electrical isolation. The battery packs are constructed using a high temperature steel enclosure and are watertight to Ingress Protection (IP) 65 rating, meaning they are protected against the ingress of dust and low pressure water jets.

The image on the next page illustrates the six battery packs and the conduit layouts used in the Ecoliner. In addition to the battery pack's steel enclosure, each battery compartment is coated with a high temperature thermal spray coating to insulate for roadway heat and/or other environmental conditions.



Because the Lithium-Hanate battery chemistry can accept a rapid charge, complete system charging can be accomplished in less than 10 minutes. Charging of a less than fully depleted pack can be accomplished in approximately five minutes. A normal average 11 - 13 mph transit service with a 1.5 to 2.0 kWh per mile drive energy consumption would require approximately 24 kW of hourly energy replacement. At an average of .10/ kWh electricity cost (averaging both peak and off-peak electricity costs) and a daily range of 120 miles daily fuel costs could be as low as $24.00, with the exception of demand charges. With increased brake life, no oil changes and engine overhauls, annual savings should be in the $40,000 range as compared to current diesel buses.

Battery temperature management is achieved through predictive pre-cooling methods using an active and passive rooftop mounted fully integrated all electric water-glycol based cooling system.

Altairnano Technology

Using a unique manufacturing process, Altaimano creates nanoparticles of titanium dioxide and other ceramic oxide materials and compounds. This flexible, patented process establishes precise control over the nanomaterial properties, including surface area, morphology, particle size and purity. The result is high-quality components including their novel nana-structured Lithium-Titanate anode material. Altairnano is developing technology that operates in the high power region previously not served by other technologies shown in the diagram above.

The principal advancement that Altaimano has made is in the optimization of nanostructured Lithium-Titanate Spinal Oxide (LTO) electrode materials that replace the graphite electrode materials found in negative electrodes of current Lithium-Ion batteries. So far these have been combined with positive electrodes from common Lithium-Ion batteries.

An electrode made with nanomaterials does not react with the electrolytes used in most Lithium-Ion systems. No reaction means that no Solid Electrolyte Interphase (SEI) barrier is formed around the electrode, making it easier for Lithium Ions to reach the surface of the electrode. And, with a nano-structured component, there's more surface area available to the ions- up to 100 times more surface area than with conventional, graphite electrodes.

Charger

Infrastructure

One advantage to the duty cycle of a fleet vehicle is the nature of the vehicle to return at a fixed time to a predetermined location or 'layover' for operator breaks and to re-align the schedule with the fixed route time points. These layovers are often 10 to 15 minutes long and present an opportunity for the Ecoliner to recharge.

The charge system's hardware and software allows for rapid charge of the energy storage from 10% to 95% in 10 minutes or less. While such power transfer normally might require a substantial grid connection to feed the rapid charge rate, this unique architecture allows for lower cost and lower impact grid connections while maintaining high charge rates.

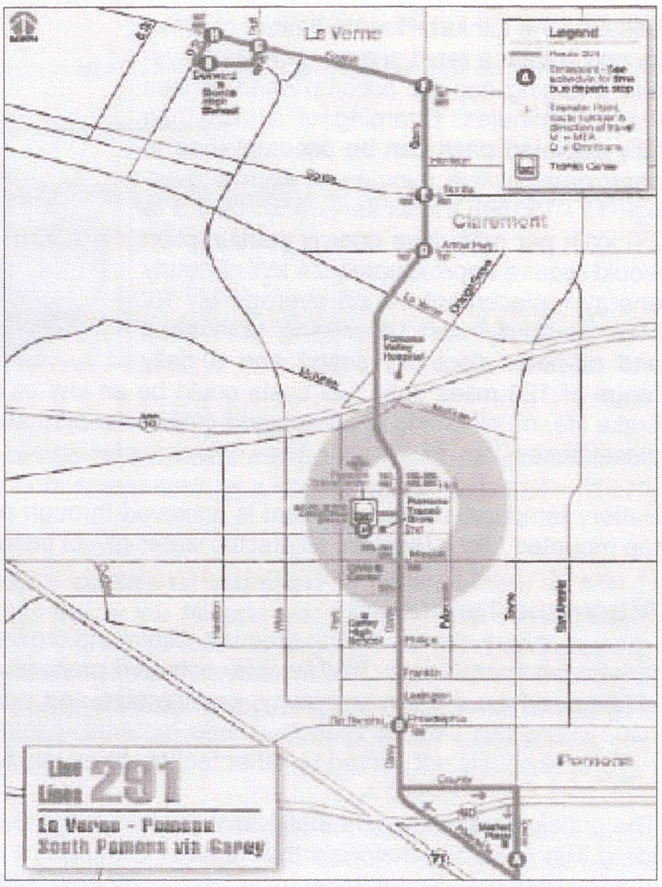
The combination of the TerraVolt™ Energy Storage System, ProDrive™ System, and the rapid charge station provides a disruptive solution to fleet vehicle operators with the following results:

- Ability to use battery-electric vehicles as a one-to-one replacement of a conventionally driven vehicle for a heavy-heavy-duty routes spanning the entire day by eliminating need to return to vehicle depot for battery charging throughout the day
- Reduce the cost of zero emission fleets given lower individual vehicle and infrastructure cost versus the high cost hydrogen alternative
- Lower on-board energy requirements given opportunity charging capability resulting in lower individual vehicle weight and investment cost
- Reduced maintenance costs resulting from absence of mechanical parts in battery-electric drive system

The Ecoliner buses will be used for revenue service on Line 291, an existing Foothill Transit route spanning from the City of La Verne to the City of Pomona (refer to map). This 12 mile line was specifically chosen for commercialization of the technology because of its roundtrip mileage, minimal deadhead from the Pomona Operations and Maintenance Facility, and its ridership demographic. Coaches on Line 291 transport five percent of Foothill Transit's total ridership annually, or 750,000 people.

After meeting with City officials in Pomona, the Foothill Transit team identified the Pomona Transit Center (PTC) as the best location for the in-route charging station (refer to map). The ideal charging station will feature one central enclosure that feeds two charging arms. This design will simultaneously charge two buses and will utilize existing bus bays. The PTC offers both a convenient location for the charger and the opportunity for community and programmatic development.

To assure total zero emissions, renewable supplies of electricity for the charging station will be purchased through a broker specializing in hydroelectric, solar, tidal, or wind electricity generation. Members of the Ecoliner Technical Team have held a series of meetings with representatives from SCE and California-based Renewable Energy Certificate (REC) brokers to discuss the purchase of renewable supplies of electricity for the Ecoliner. With a true 'zero emissions' goal in mind, securing renewable sources of energy to charge the bus batteries is a critical component of the ground-breaking example the Ecoliner will set for the transit world.



Sustainability

California Air Resources Board (CARB) Support

The CARB has already demonstrated its full support of the Foothill Transit Ecoliner and noted specifically that this project was not undertaken in response to mandatory regulation. In a letter from Tom Cackette, Chief Deputy Executive Officer of CARB, CARB concluded that:

> *'The demonstration of this technology will result in the reduction (as compared to diesel buses) of.47 tons of criteria pollutants and 77.73 tons of climate change emissions, per bus placed each year ... ARB believes these emission reductions will benefit California's air quality, and help to meet California's long term clean air goals. This bus would meet the requirements of the ZEBus regulation; though CARB understands that the regulation is not the driver of this project ... CARB is very interested in this project and is willing to provide support in any way possible.'*

To scale back GHG levels to those of 1990, clean transit is key. As noted by the Regional Targets Advisory Committee (RTAC) in its final recommendation to CARB, transit will have to expand its services substantially over the next decade to meet these goals and to accommodate increased service demands as a result of population growth. Funding to projects like The Foothill Transit Ecoliner enables the viability of long-term policies, consistent with AB 32. Specifically, it sparks a cycle of comprehensive planning, clean fuel propulsion technologies, and green job growth.

LOS ANGLES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (MTA)

LOS ANGELES: **MTA** affiliate Los Angeles Metro Gold Line Foothill Extension Construction Authority issued an RFP for Extension Phase 2A. The $450 million design-build-finance project involves final design, construction and financing of 11.5 miles of track covering five stations east from the current terminal in East Pasadena plus a 25-acre light rail maintenance facility.

Proposals are due at the end of February and a contract award is anticipated for April 2011.

The El Monte Station, opened in July 1973 and serving as the eastern terminal of the San Bernardino Freeway Express Busway since that time, was officially closed at midnight on the night of September 25th to allow the construction of the new two-story El Monte Transit Center to include a regional transit store and bike station and with direct connections to and from the I-10 Freeway Busway.

Last buses on the last night included — **METRO** NABI 8396 on the 910-SILVER LINE was the last officially scheduled bus out of the terminal (1155PM). The bus actually arrived at 1155PM and departed at 1206AM. **FT** F1709 on the SILVER STREAK arrived at 1158PM and departed at 1201AM. **METRO** NABI 7011 on Line 194 departed at 1207AM and **METRO** NABI 7158 on Line 190 departed at 1208AM (Both were scheduled at 1205AM.

During the two-year construction period, **MTA, FT** and **GREYHOUND** buses will move to the El Monte Temporary Station, which will be functioning in that portion of the Division 9 property that formerly was used for **MTA** auto and bus parking, just west of the former 3369 building.

Private buses on hand at the closing included Scott Richards 3020, ex **PHOENIX** low floor New Flyer, and Transit Systems 1210, former **SACRAMENTO** Orion V.

ASSOCIATED STUDENTS, UNIVERSITY OF CALIFORNIA, IRVINE (ASUCI)

IRVINE: The ANTEATER EXPRESS, formerly known as ASUCI, was revised and expanding this school year and the fleet has been changed over from a collection of Bluebird TC2000s to a fleet of 25 reconditioned and repainted El Dorado National EZ Riders that were formerly **OCTA** 6001-6025.



The traditional routes, PARKWEST-CARLSON, VISTA DEL CAMPO-ADMIN, ARROYO VISTA-ADMIN-ARC, MAIN CAMPUS SHUTTLE, NEWPORT BEACH and VDC-ADMIN are operating as usual.

Two new housing communities, CAMINO DEL SOL and PUERTA DEL SOL, now have their own shuttle routes, to and from the main campus.

In addition, a NEW Saturday Only route (UCI-THE SPECTRUM) was inaugurated between the UCI campus, On Campus Housing, Irvine Spectrum and Irvine Station with stops at University Center, on Arroyo Drive and at Culver & Michelson.

All trips serve The Spectrum, but only selected trips serve the railroad station.

Service operates beginning at 930AM, 1100AM, hourly between 1230PM and 530PM, then 700PM, 800PM, 930PM and 1100PM.

PENINSULA CORRIDOR JOINT POWERS BOARD (CALTRAIN)

SAN CARLOS: The **CALTRAIN** Board recently voted to increase fares and reduce service to help balance the current budget.

It will cost 25 cents more for each zone a rider passes through (there are six between San Francisco and Gilroy). The new fare between San Francisco and San Jose will cost $8.50, a monthly pass will be $225.

The monthly price of the employer-sponsored Go Pass will increase by $15 to $155, the second increase in as many years.

In addition, two trains from opposite ends that each depart at 930AM and 230PM will be discontinued leaving hourly midday service on weekdays between 900AM and 300PM.

The ticket offices in both San Francisco and San Jose will be closed with seven jobs lost and an annual savings of $600,000.

PIERCE TRANSIT (Pierce County Public Transit Benefit Area) (PT)

TACOMA, WA: **PT** Commissioners voted to preserve current service levels and directed staff to draft a ballot proposition for the February 2011 election to exercise the final 0.3 percent sales tax authority available.

The agency has been retrenching in all areas for the last few years—less service, layoffs, a 25-cent fare increase and delays of capital projects.

COMMUNITY TRANSIT
(Snohomish County Public Transit Benefit Area)
(CT)

LYNNOOD, WA: **CT** reduced service levels (officially considered a suspension awaiting receipt of funds to restore service) beginning June 13th including discontinuation of all Sunday and Holiday operations, reduced commuter service to Seattle, fewer early morning and late night trips and revised routings that eliminated neighborhood loops.

The headway on 101-MARINER PARK & RIDE—AURORA VLLAGE VIA HWY 99 was reduced from 20 to 30 while the *SWIFT* Bus Rapid Transit, also on Hwy 99 remained unchanged, except for the loss of Sunday.

Nine lines were discontinued—115, 200, 207, 404, 411, 441, 812, 851 and 870.

The Washington Legislature's Joint Transportation Committee will be studying transit funding this year with a plan to bring a recommendation to the 2011 session.

CT will monitor this effort as an agency that is at its legislated maximum for local sales tax support. Because transit agencies in the state are so reliant on sales tax, they are prone to the volatility of those funds. Most agencies are facing similar budget problems.

SOUND TRANSIT
(ST)

SEATTLE, WA: The **ST** Board has voted to purchase rights to 4 additional south line *SOUNDER* round trips.

The $185 million purchase from **BNSF** will allow the rail agency to incrementally increase service from 9 to 13 round trips, beginning in 2012. The expanded service will include four peak hour, peak direction trains with the ability to operate reverse direction and midday service.

NEVADA TRANSPORTATION AUTHORITY
(NTA)

LAS VEGAS, NV: The agendas for the last three Authority meetings have included a number of transportation service items. Many firms have also requested tariff rate modifications.

Robert Sadowski dba DOWNTOWN LIMO has applied for a certificate as a common carrier to offer charter limousine service within the state while the temporary discontinuance (January-June 2010) of services offered by *TRANS PACIFIC COACHLINE, LTD* under CPCN 2054 has expired. Staff has requested an order to show cause why this certificate should not be revoked.

NEW CHARTERS NEVADA, LLC has applied for a certificate to operate as a common carrier providing charter limousine service within the state while *H. I. S. TOURS USA, INC.* has requested contract modification for contract carrier services provided under Contract Carrier Permit MV 6131.

Lets Go Tours, LLC dba GRAND TOURS has applied for authority to provide charter bus service within the State of Nevada. *Royalty Limos, LLC dba ROYALTY LIMOS* has applied for a certificate to provide charter bus service within the state.

J & J Tours, Inc. dba J & J TOURS has filed for authority to operate as a contract motor carrier of passengers within the State of Nevada.

THE WOODSTOCK TROLLEY

(A story about a small bus considered as an experiment in both technology and transportation. The program is taking place this summer and fall. While a bit "out of area", it is a very interesting experiment).

WOODSTOCK, VERMONT: An electric-powered "trolley bus" will soon be traveling through Woodstock, stopping to pick up passengers on its way to Marsh-Billings-Rockefeller National Historic Park, the state's first national park and one focusing on conservation.

The trial run for the Upper Valley's only electric powered public transportation began in July.

Up to $215,000 of grant money through the National Park System is funding the project, said a planner for Two Rivers Ottauquechee Regional Commission.

The 21-seat electric bus is an experiment in technology and transportation. It could help free up downtown parking in the busy fall. The two trolleys are the result of a partnership of Two Rivers, Marsh-Billings, Woodstock town and village and *ADVANCE TRANSIT.* Woodstock will lease the trolleys from New Haven, Conn.

The trolley will be powered by Central Vermont Public Service's "Cow Power" program, through which dairy farmers earn extra income by using manure to generate electricity. It is estimated that 16 cows a day will power the Woodstock Trolley. The vehicle, operated by specially trained *ADVANCE TRANSIT* drivers, will be able to drive between 80 and 120 miles before recharging, depending on the grade of the road and weather conditions.

Drivers need to become familiar with the quirks of the new technology. The trolley will recharge at the charging station set up at Woodstock's sewer facility. For *AV,* this will be an opportunity to learn about operating

ORANGE COUNTY TRANSPORTATION AUTHORITY
Orange, California

FLEET #	BUILDER	MODEL	SERIAL #	YEAR	NOTES
2101	NABI	040.09	XA140370	1999	
2102-2111	NABI	040.09	YA140334-343	2000	
2112-2161	NABI	040.09	YA140345-394	2000	
2201-2299	NABI	040.09	1A140337-435	2001	
2301-2372	NABI	040.09	1A140436-507	2001	
5121-5150	New Flyer	C40LFR	8C033779-808	2008	Suburban Interiors
5301, 5333, 5352	New Flyer	D40LF	VU017939, 971, 990	1997	Bone Pile
5375, 5377	New Flyer	D40LF	VU018013, 015	1997	Bone Pile
5401	New Flyer	D40LF	VU017537	1997	Contingency
5402	New Flyer	D40LF	VU018046	1998	Bone Pile
5403-5404	New Flyer	D40LF	VU018047-048	1998	Contingency
5405	New Flyer	D40LF	VU018049	1998	Bone Pile
5406-5416	New Flyer	D40LF	VU018050-060	1998	Contingency
5501	New Flyer	C40LFR	6C030546	2006	
5502-5564	New Flyer	C40LFR	7C031312-374	2007	
5565-5599	New Flyer	C40LFR	7C032164-198	2007	
5601-5610	New Flyer	C40LFR	7C032199-208	2007	
5611 (I)	New Flyer	C40LFR	7C032209	2007	1
5611 (II)	New Flyer	C40LFR	7C034886	2007	
5612-5674	New Flyer	C40LFR	7C032210-272	2007	
5675-5678	New Flyer	C40LFR	8C033682-685	2008	
6301-6309	Chevy 560HT	ElDorado Aero Elite	Mixed	2005	
6311-6312	Chevy 560HT	ElDorado Aero Elite	Mixed	2005	
6321-6324	Chevy 560HT	ElDorado Aero Elite	Mixed	2008	
6325-6330	Chevy 560HT	ElDorado Aero Elite	Mixed	2008	City of Irvine
6331	Chevy 560HT	ElDorado Aero Elite	Mixed	2008	
6332-6337	Chevy 560HT	ElDorado Aero Elite	Mixed	2008	City of Irvine
6338-6340	Chevy 560HT	ElDorado Aero Elite	Mixed	2008	
6401-6403	Ford Econoline 350	ElDorado Aerotech	Mixed	2006	Contingency
6404-6406	Ford Econoline 350	ElDorado Aerotech	Mixed	2006	Training
6407-6409	Ford Econoline 350	ElDorado Aerotech	Mixed	2006	Contingency
6410-6432	Ford Econoline 350	ElDorado Aerotech	Mixed	2006	
6501-6558	Ford Econoline 350	ElDorado Aerotech	Mixed	2008	
6601-6699	Ford Econoline 350	ElDorado Aerotech	Mixed	2008	
6701-6741	Ford Econoline 350	ElDorado Aerotech	Mixed	2008	
6801-6833	Ford Econoline 350	ElDorado Aerotech	Mixed	2009	
7301-7320	New Flyer	D60LF	YU021494-513	2000	
7401-7420	New Flyer	D60LF	1U023196-215	2001	
7501-7528	New Flyer	C40LFR	7C032273-300	2007	
7529	New Flyer	C40LFR	7C031723	2007	
7530-7592	New Flyer	C40LFR	8C033709-771	2008	

1 - In accident on March 24, 2008 in Oklahoma when being delivered.

electric powered vehicles. They operated on weekends during August and the first two weeks in September. The trolley will operate daily between September 15 and October 15, stopping at various parking lots and heavily frequented areas in the village.

FOOTHILL TRANSIT
(FT)

POMONA: On September 3rd, Foothill held a unveiling ceremony at their Pomona facility to introduce their new electric Ecoliner buses made by Proterra, F2001-F2003. The will be operating on Route 291. *(LEFT: F2003 at the unveiling. Craig Barnes photo.)*



EQUIPMENT REPORT

(All properties are located in California unless otherwise noted)

PROPERTY	FLEET #'S	BUILDER	MODEL/SERIAL #'S	DATE	NOTES
-NEW-					
Foothill Transit	F2001-F2002	Proterra	EcoRide BE35/AG816003-005	04/10	
Greyhound Lines, Inc (TX)	86300-86305	MCI	D4505/AP059487-492	00/10	
	86306	MCI	D4505/AP059494	00/10	
	86307-86366	MCI	D4505/AP059497-556	00/10	
	86367, 86368	MCI	D4505/AP059558, 560	00/10	
	86369, 86370	MCI	D4505/AP059562, 493	00/10	
	86371-86372	MCI	D4505/AP059	00/10	
Orange County Transp Auth	6801-6833	Ford Econoline	ElDorado Aerotech/mixed	00/10	
Norwalk Transit System	7086-7089	New Flyer	GE40LFR/—	00/09	
-USED-					
Anteater Express (ASUCI)	6001	ElDorado/National	E-Z Rider/VC084252	00/98	1
	6002-6008	ElDorado National	E-Z Rider/WC084001-007	00/98	1
	6009-6025	ElDorado/National	E-Z Rider/WC084009-025	00/98	1
-DISPOSITIONS-					
Los Angeles County MTA	4500-4700	Neoplan	AN440A/see below	95/97	2
Orange County TA	7201-7210	New Flyer	D60LF/XU019458-467	00/99	3
LADOT	99002	ElDorado/National	RE-29/XC084029	00/99	4
Omnitrans	700-723	Orion	05.501/see below	00/97	5

NOTES:

1 Ex Orange County Transportation Authority 6001-6025.

2. Sold thru Ken Porter Auctions in July 2010 -
   Buses are 4509, 4523, 4535, 4544, 4562, 4582, 4613, 4626, 4643, 4665, 4666, 4675, 4728, 4743, 4750, 4757, 4759, 4786.
   VINs are SL013105, 119, 131, 140, 184, 204, 245, 258, 275, 297, 298, 307, VL013307, 045, 060, 149, 156, 158, 185.
3. Sold at General Auction Company (Buena Park) in September 2010.
4. Sold thru Ken Porter Auctions in July 2010.
5. Sold thru U. S. Auctions (Upland) in September 2010 -
   Buses are 700, 701, 709, 712, 713, 716, 721, 722.
   VINs are T6032940, 941, 949, 952, 953, 956, 961, 962.

San Diego's METROPOLITAN TRANSIT SYSTEM recently sold four of their 1001-1071 series Siemens U-2 model light rail vehicles to the Mendoza province in Argentina for $1.2 million. The province has plans to purchase a total of 11 of the cars. MTS has plans to replace all of these cars with new Siemens S-70 low floor cars that will begin arriving in San Diego next year.



Norwalk 7089 on Route 4 at the Norwalk Metrolink station on June 24, 2010. Photo by Andrew Novak.