



Agenda

Metro Sustainability Council

LA Metro HQ
William Mulholland
15th Floor
One Gateway Plaza
Los Angeles, CA

Agenda

- a. Welcome/Introductions: Chair (5 min)
 - b. Approval of Minutes: Chair (5 min)
 - c. Draft Meetings ARC for FY19: Bryan (10 min)
 - d. Introduce Climate Action Plan Update: Cris (20 min)
 - e. Oral Update on LRTP Outreach & Activities: Paul (20 min)
 - f. Motion 57 Update Follow-up: Stephanie (10 min)
 - g. Vacant Council Positions: Chair (15 min)
 - h. Subcommittees Discussion: Chair (15 min)
 - i. Action Items Log: Aaron (10 min)
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Metro Sustainability Council

Friday, September 21, 2018 at 9:00-11:00am

Agenda

Metro Sustainability Council

LA Metro HQ
William Mulholland, 15th Floor
One Gateway Plaza
Los Angeles, CA

Meeting Goals

1. Roll-out and Approve Metro Roles, Amendments and Responsibilities in Council
2. Provide report back on Metro activities relative to Motion 57
3. Identify Council Topics of interest for Calendar Year

Agenda

- a. Roll Call: 5 minutes
- b. Council Chair Report: Global Climate Action Summit/Zero Emission 2028 Roadmap: 10 minutes (Small)
- c. Metro Roles and Responsibilities: 10 minutes (Wiggins, Clarke)
- d. Motion to Amend By-Laws: 10 minutes (Wiggins)
- e. Metro Report on Activities Relative to Motion 57: 45 minutes (Liban)
- f. FY19: Agenda Setting and Goals: 30 Minutes (All)
- g. Adjourn

Meeting Minutes

Item A: CALL TO ORDER

A monthly meeting of the Metro Sustainability Council was held on Friday, September 21st. The meeting began at 9:17 AM, P.S.T. and was presided over by Council Chair, Mayor Thomas Small.

The Council meeting was opened by Chair Small and commenced with self-introductions by each attending Council member, alternates, Metro staff, and other attendees.

Item B: COUNCIL CHAIR REPORT

Council Chair, Mayor Thomas Small, delivers a summary of his experience while attending the 2018 Global Action Summit; held in San Francisco September 12-14, 2018. The Chair invites individual testimony from Council members who attended the Summit:

Joel Levin: Was excited about the ZEV Challenge which was launched at the Summit. For the first time, state and regional governments, cities and businesses representing millions of dollars in purchasing power have united to accelerate the global manufacture of Zero Emission Vehicles and signal an endgame for fossil-fuel vehicles.

Caryn Mandelbaum: The Water Pavilion was hosted by the California Governor's Office of Planning and Research and sponsored by the Water Foundation, Leonardo DiCaprio Foundation, and other foundations and NGOs. There were inspirational speakers, high-level panel discussions, and interactive workshops to articulate the water-climate connection and inspire participants to make ambitious commitments. Activities were organized around five themes:

- **Science to Action** – A reflection on what we know and how science should inform action
- **Laws and Governance** – Elevating governance structures that support and achieve water-climate resilience
- **Financing Solutions** – Exploring creative financing approaches for water innovations and infrastructure globally
- **Communities on the Front Lines of Climate Change** – Communities coming together to share what they've learned and identify pathways to resilience
- **Water-Climate Commitments** – Participants making public commitments to increase the pace and scale of water-climate resilient actions

Bruce Reznik: Stated that he was disappointed that 'water' wasn't a more prominent topic at the summit.

Kristen Torres-Pawling: Mentions the Paris Climate Agreement; U.S cities are driven to meeting goals to meet the 2025 pledges. See recent report on how cities pledge to meet goals here: https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge_Executive-Summary_2018.pdf

Bryn Lindblad: Notes that many topics at Summit were appealing with the “Cool kids” and had ‘Superbowl’ graphics. Agrees that most pledges are ambitious. Interested in discovering ways to get entities to step up (example: All transit buses to be electric by 2028) and inspire communities to live in more climate resilient city.

Bryn mentions an LA Times article about air quality that was below quality limits this summer (<http://www.latimes.com/local/lanow/la-me-smog-streak-20180921-story.html>).

Pavitra Rammohan: Recommends financing infrastructure through resiliency bonds. To link insurance coverage that public sector entities can already purchase (such as catastrophe bonds) with capital investments in resilient infrastructure systems (such as flood barriers and green infrastructure) that reduce expected losses from disasters. Proactively planning for disasters is more cost efficient. Mentions that the City of San Diego is actively doing this.

Salem Afeworki: Notes that it was good to see people from outside the U.S. Participating in the Summit.

Good that the Lyft office is beginning to receive support from policy makers. Celebrated LACI (and CalCEF) California Cup (a competition seeking the next generation of startups who are ready to make a global impact).

Doug Dietrich: How do we hold pledge makers accountable? It’s going to come down to economics.

Kristen Torres Pawling: Mentions that there is a portal where people register their commitments. (See: <https://www.wearestillin.com/organization/los-angeles-ca>)

Cris Liban – The Paris Accord has appeal on a sub-national level: Island nations and their communities; coastal communities; Republican mayors who believe in climate change. There is also appeal to people who stand to create an economic benefit.

Doug Dietrich - “It’s on us to get the word out.”

Dominique Hargreaves - So many agencies and leaders have set up to make these pledges. Net Zero conference, new tools announced. The industry will respond with useful and low-cost ways for people to meet their pledges.

Chair Small – I like the tone of the discussion. We can become a source of vision and most forward thinking. We can offer leadership and bring together different sectors that relate to environmental sustainability.

Item C: METRO ROLES AND RESPONSIBILITIES

Stephanie Wiggins – Offers self-introduction. We need to ensure the work that is made by this Council meets the intent of the Metro Board. We want to hear from Council members because we want to be clear about scope; ensure we are in alignment.



One of the “Three amigos” (i.e. Metro Executive Management: Deputy CEO Stephanie Wiggins, Chief of Program Management, Rick Clarke, and Senior Executive Officer, Bryan Pennington) will attend each Council meeting to support Cris, Debra, Paul, and the Council Chair with overview and commitment.

Rick Clarke – Offers self-introduction. The Sustainability Council forum is crucial to utilize environmental and community benefits across a wide range of Metro activities. I look forward to attending future Council meetings.

Item D: MOTION TO AMEND BY-LAWS

Motion to Amend the By-laws of the Metro Sustainability Council

In an effort to be consistent with the process and procedures of other Metro Advisory Councils that were formed to implement the Capital and Funding programs at Metro since the passage of Measure M, be it resolved that:

- *The by-laws of the Metro Sustainability Council will be amended to reflect Metro membership in the Sustainability Council to be changed to the status of ex officio;*
- *The total number of Council seats will be reduced from 30 to 27, with 24 currently representing constituencies of specific sectors;*
- *Specific representation and fulfillment of vacancies for the current four vacant Council seats will be determined during a future meeting of the Sustainability Council.*

Motion: In keeping with structural re-alignment. Metro facilitates meeting but doesn't have a voting role.

Ghina Yamout – Offers a motion that executive committee has a government member on it. Cris Liban recommends this motion be considered after addressing items on the current agenda.

Paul Backstrom reviews by-law motion with Council.

Motion passes with unanimous “Yays” and “No” opposed.

ITEM E: METRO REPORT ON ACTIVITIES RELATIVE TO MOTION 57

Cris Liban: Reviewed ECSD program and initiative status update report presenting 128 items in a comprehensive ‘colorful chart’ (named coined by Chair Small). Members are directed to write questions on index cards passed out by staff, which will be answered as time permits or in writing by the next Council meeting.

A variety of questions were posed by members during presentation by Cris Liban:

Kristen Torres-Pawling: Raises concerns about vulnerable road users; unprotected road users such as pedestrians and cyclists and the measures taken to protect them.

Pavitra Rammohan: Suggested to maintain consistency with the recently published and released Climate Safe Infrastructure report published by the State (LA Metro Sustainability Council was part of this effort) and thereby the Climate Action Plan is developed or updated using the latest knowledge and findings within the CSI report. Link to report is here.

http://resources.ca.gov/docs/climate/ab2800/AB2800_Climate-SafeInfrastructure_FinalWithAppendices.pdf

Caryn Mandelbaum: Regarding CNG; is it possible to source renewable energy?

Doug Dietrich: What can be done to create clean jobs?

Chair Small: Stated that his colleague, who is Swedish, is interested in presenting to the Council on Anaerobic Technology for wastewater systems. He would like to invite for presentation.

Caryn Mandelbaum: Interesting to see if Chair Small's colleague is working with the Hyperion Plant.

Reuse: Water was not a part of that plan. Open to comments and suggestions.

Roy Thun: Does Metro have a report about the amount of water it consumes? Cris Liban responds that the Annual Energy and Resource Report, released in July 2018, includes data on water usages for Metro.

Will Wright: Is this new or different? Consider the investments you make to increase your energy facilities.

Bruce Reznik: Mix of things that are metrics based... Bruce asked, "What is the Council's role" (regarding) the projects described (by Cris Liban)?

Stephanie Wiggins: We need input from the Council on the following policy priorities: (1) Resiliency, (2) Green Procurement, and (3) Climate Action and Adaptation Plan update for this fiscal year. The Council should weigh-in on 'policy' and 'metrics' and potentially on the 'mega' projects. She noted that the 'colorful chart' is a living document.

Bruce Reznik: Agrees with Stephanie

Cris Liban: Indicated that the Resiliency framework draft would be presented to the Council on November 2018.

Bryn Lindblad: Requested the Council receive a schedule of when draft documents will be distributed for review.

Chair Small: Stated that subcommittees will be addressed at the next meeting.

Motion to adjourn - Motion to adjourn by Bruce Rezik. Second by Berwyn Salazar.
Meeting is adjourned at 11:12am.

Attachment: Attendee List

ATTENDEE LIST

ATTENDED	COUNCIL MEMBER	ATTENDED	COUNCIL MEMBERS
N	Aki Luukkainen	Y	Salem Afeworki
N	Anthony Brower	N	Stephen Ch eung
N	Belinda Faustinos	N	Steven Johnson
Y	Berwyn Salazar	Y	Thomas Small, Chair
Y	Bruce Reznik	N	Wendy Ramallo
Y	Bryn Lindblad, Co-Chair	Y	Will Wright
N	Carolina Coppolo		
N	Carolyn Hull		
Y	Caryn Mandelbaum		
N	Charles Favors		
N	Cindy Montanez		
Y	Debra Avila		
Y	Dominique Hargreaves, Co-Chair		
Y	Doug Dietrich		
N	Elizabeth Rhoades		
N	Emily Freund		
N	Fernando Cazares		
N	Gary Gero		
Y	Ghina Yamout		
N	Hilda Blanco		
N	Jack Sahl		
Y	James Okazaki		
Y	Joe Ablay		
Y	Joel Levin		
N	John Williams		
N	Kimberly Colbert		
Y	Kristen Torres-Pawling		
N	Lauren Faber		
N	Mark Hunter		
N	Mark Kempton		
N	Michael Samulon		
N	Michael Swords		
N	Mike Bagheri		
N	Omar Gomez		
N	Patricia Menjivar		
Y	Paul Backstrom		
Y	Pavitra Rammohan		
N	Peter Meng		
Y	Roy Thun (attended via phone)		

ATTENDED

Y
Y
Y
Y
Y
Y
Y
Y
Y

NON-MEMBERS

Stephanie Wiggins
Bryan Pennington
Richard Clarke
Aaron Santos
Alvin Kusumoto
Christine Marez
Cris Liban
Lynda Bybee
Valerie Davis

Metro Sustainability Council



Sustainability Council
 FY19 DRAFT Meetings Arc
 As of Sept 30, 2018

Meeting	Agenda Topics	Outcomes
September 21, 2018	*New Metro Role	*Bylaws amended to reflect new Metro role
	*Motion 57 Progress Update	*All participants leave meeting with a basic understanding of Metro’s current progress related to Motion 57
October 12, 2018	*Introduce Climate Action Plan (CAAP) Update topic *Oral Update on LRTP Outreach and Activities	*All participants leave meeting with a basic understanding of Metro’s current practices related to CAAP, as well as best practices in this field (related to transportation projects), and challenges related to this topic. *Direction provided from the Council to Metro staff on developing initial recommendations on CAAP update; additional information needs identified *All participants leave meeting with a basic understanding of the LRTP development progress and provide feedback as part of the outreach effort.
November 9, 2018	*Introduce Resiliency Framework topic	*All participants leave meeting with a basic understanding of Metro’s current practices related to Resiliency, as well as best practices in this field (related to transportation projects), and challenges related to this topic. *Direction provided from the Council to Metro staff on developing initial recommendations on a Resiliency Framework; additional information needs identified

	<ul style="list-style-type: none"> *Introduce Green Procurement Policy topic 	<ul style="list-style-type: none"> *All participants leave meeting with a basic understanding of Metro's current practices related to Green Procurement, as well as best practices in this field (related to transportation projects), and challenges related to this topic. *Direction provided from the Council to Metro staff on developing initial recommendations on Green Procurement Policy; additional information needs identified
December 14, 2018	<ul style="list-style-type: none"> *CAAP Update: Introduce Candidate GHG Reduction Strategies 	<ul style="list-style-type: none"> *Direction provided from Council to Metro Staff on GHG reduction strategies in a workshop format
January 11, 2019	<ul style="list-style-type: none"> *Present draft Candidate Climate Adaptation Strategies; continue discussions re: CAAP Update *Present draft Green Procurement Policy * GHG Inventory/Forecast 	<ul style="list-style-type: none"> *Feedback provided by the Council to Metro staff on draft Candidate Climate Adaptation Strategies; CAAP Update *Feedback provided by the Council to Metro staff on draft Green Procurement Policy * Provide an update and receive feedback input on the methodology and results of GHG inventory
February 8, 2019	<ul style="list-style-type: none"> *Adaptation & Resiliency Workshop *Presentation on LRTP Values Framework * GHG Reduction Analysis * County of Los Angeles Draft Sustainability Plan 	<ul style="list-style-type: none"> *Feedback provided by the Council to Metro staff at the Workshop * All participants leave meeting with a basic understanding of the LRTP development progress, including the Values Framework and provide feedback as part of the outreach effort. *Provide an update and receive feedback from Council on the GHG Reduction Strategies *Feedback provided by the Council on County Sustainability Plan
March 8, 2019	<ul style="list-style-type: none"> *Motion 57 Progress Update 	<ul style="list-style-type: none"> *Consensus Comments received from the Council to Metro Staff on draft Chapters 1, 2, and 5 of the CAAP

		<p>Update</p> <ul style="list-style-type: none"> *Consensus Comments received from the Council to Metro Staff on the draft Green Procurement Policy * All participants leave meeting with a basic understanding of Metro's current progress related to Motion 57
April 12, 2019	<ul style="list-style-type: none"> *Adopt Green Procurement Policy 	<ul style="list-style-type: none"> *Consensus Comments received from the Council to Metro Staff on draft Chapters 3, 4, and Executive Summary of the CAAP Update *Green Procurement Policy recommendations & metrics adopted by the Council
May 10, 2019	<ul style="list-style-type: none"> *Adopt CAAP Update *Adopt Resiliency Framework 	<ul style="list-style-type: none"> *CAAP Update recommendations & metrics adopted by the Council *Resiliency Framework recommendations & metrics adopted by the Council
June 14, 2019	<ul style="list-style-type: none"> *Metro Board approval of CAAP Update & Resilience Policy *Draft FY20 Meetings ARC 	<ul style="list-style-type: none"> *All participants discuss potential policy topics for FY20 cycle



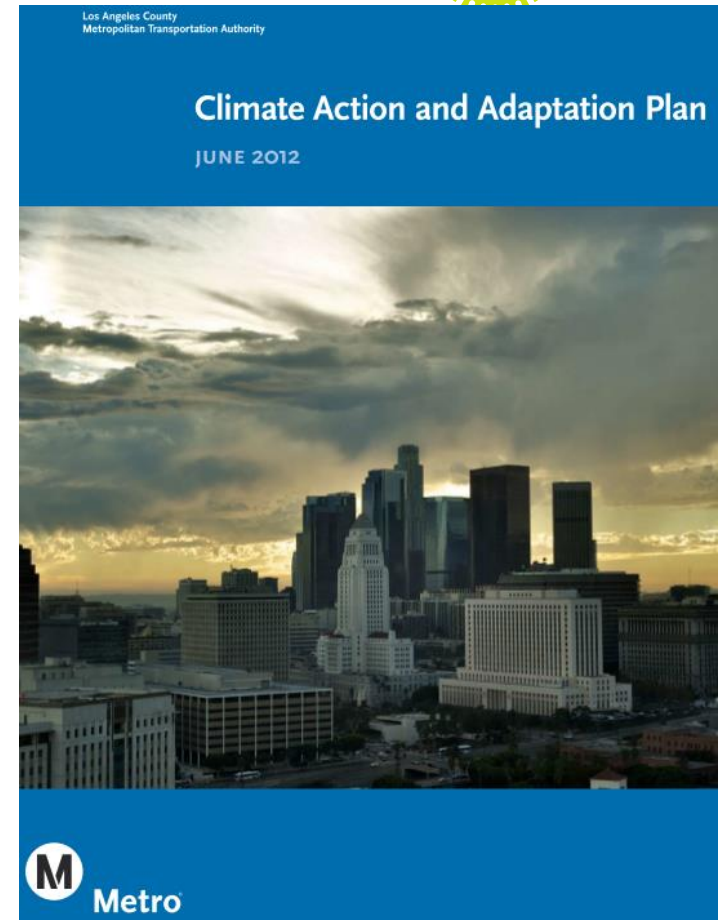
Metro's Climate Action and Adaptation Plan



Metro[®]

2012 CAAP

- Establishes the framework for Metro projects, programs, and facilities to:
 - Reduce GHG emissions from operations
 - Prepare for the impacts of climate change on Metro's systems
- 2010 GHG inventory
- 2020 forecast
- 11 GHG reduction strategies
- Vulnerability assessment
- 10 adaptation options



CAAP Update

- Successes/lessons learned
- 2017 baseline inventory
- 2030 and 2050 forecasts
- GHG reduction strategies
- Vulnerability & criticality assessment
- Adaptation strategies
- Resiliency assessment and building



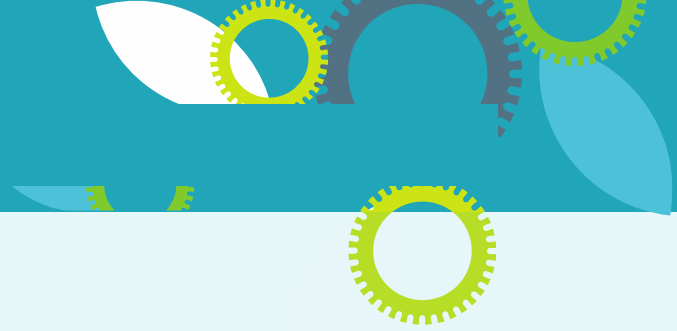
Engagement Opportunities

- GHG reduction strategies
- Adaptation strategies
- Resiliency framing
- Preliminary draft CAAP



Engagement Timeframe

- November 2018: candidate GHG reduction strategies
- February 2019: draft candidate GHG reduction strategies evaluation & candidate adaptation strategies
- March 2019: Draft CAAP review



Thank you!

Questions?

PROPOSED SCOPE OF WORK

For each major task, the proposed approach is summarized for addressing the key technical issues. Schedule for deliverables referenced below presume a NTP by 10/1/18.

Task 1: Project Management

The ICF project management team will direct each of the tasks denoted below. They will ensure communication pathways are always open between the ICF/project management team, ICF technical staff, and LA Metro (Metro) staff. ICF will hold bi-weekly team meetings with Metro to ensure tasks are delivered on time and within budget, issues are quickly resolved, and that all members of the team are on the same page regarding objectives, budget, and schedule. As part of the invoice, the project management team will provide monthly progress reports to Metro that summarize budgetary information, discusses work performed during the reporting period, and identify any existing or potential issues moving forward.

Task Products

- Schedule of bi-weekly check-in meetings
- Notes from monthly check-in meetings (MS Word)
- Monthly invoices and reimbursement forms (MS Word or Adobe PDF)

Task 2: GHG Inventory and Forecasting

Based on the material provided by Metro, LSA has completed the following tasks relative to inventorying and forecasting GHG emissions:

- 2016 GHG Inventory for Internal Operations
- 2030 GHG Forecast for Internal Operations
- Land Use Factor Memorandum for Displacement Analysis
- GHG Regulatory Matrix

Based on review of this material, ICF assumes it will complete the following tasks:

- 2017 GHG Inventory for Internal Operations
- 2030 and 2050 GHG Forecast for Internal Operations
- Review/Revise Land Use Factor Memorandum for Displacement Analysis
- Displaced Emissions Analysis for 2017 conditions ,2030 and 2050.

Task 2 Schedule

Our proposed schedule for this scope of work is as follows:

- Draft Internal Inventory and Forecast MS Excel Sheets for Metro Review – 11/23/18
- Metro Review of Draft Spreadsheets– 12/7/18
- Final Internal Inventory and Forecast MS Excel Sheets – 12/21/18

Task 2.1—Review and Update GHG inventory for Internal Operations

ICF assumes that the 2017 inventory prepared as part of the 2018 Energy and Resources Report contains complete activity data is Under this task, ICF will prepare a draft template for documentation of the inventory, for

review and comment by Metro staff. The inventory will be then be documented in the spreadsheets in Task 2.5 and the CAAP report in Task 7.

ICF will consult with Metro staff to determine potential revisions to the existing Baseline Inventory Report. The identified revisions will be applied to the GHG spreadsheets in Task 2.5 and the CAAP report in Task 7.

Task 2.1 Products

- Draft revised template for GHG Inventory (MS Excel)
- All other work will be documented and reviewed in Task 2.5 and Task 7

Task 2.2—Update Displaced Emissions Analysis

The LSA analysis of displaced emissions is limited to 2016, and includes those emissions related to a direct mode shift, indirect congestion relief, and indirect land use.

ICF will review the source data and factors used for the mode shift and congestion relief and update, if necessary. No new data collection is presumed for the purposes of this scope. If complete source data is available from Metro for 2017, ICF will update the analysis to quantify 2017 displaced emissions instead of 2016.

ICF will review and revise the existing Land Use Factor Memorandum for adequacy and completeness. The current memorandum does not mention TCRP Project H-46, which was a major research effort that ICF completed in 2014 to tackle the question of the transit/land use linkage. In addition to a final report for that TCRP project, ICF also produced an Excel land use effect calculator tool, which should be reviewed and referenced. The current memorandum weights all the past research studies the same. However, some of the past studies cited are simplistic, while others involved sophisticated modeling. Based on ICF review of the current literature, we will prepare a revised memorandum documenting whether current research does or does not warrant a revision prior land use multiplier (which ICF developed for Metro in 2012).

ICF's scope and budget does not assume any VMT modelling will be necessary to complete this task.

Task 2.2 Products

- Land Use Multiplier Update Memorandum
- All other work will be documented and reviewed in Task 2.5 and Task 7

Task 2.3—Update and Develop Internal Operations Forecasts

Although LSA has provided a 2030 forecast for internal operations, ICF proposes to develop a new 2030 forecast at Metro's request, as well as a 2050 forecast.

A new 2030 internal operations forecast will be developed by ICF. The forecast will start from the 2017 inventory. ICF will confer with Metro about the forecast activity data and emissions factors to be used for the 2030 forecast. This scope includes both a BAU and an adjusted BAU forecast (accounting for state regulations).

ICF will identify proposed forecast activity data and emissions factors to be used for the 2050 internal operations forecast and present that data to Metro for confirmation before completing the 2050 forecast of emissions.

Task 2.3 Products

- Proposed forecast activity data and emissions factors for 2030 and 2050 forecast for Metro confirmation
- All work will be documented and reviewed in Task 2.5 and Task 7

Task 2.4— Update and Develop Displaced Emissions Forecasts

Based on the material reviewed, no displaced emissions forecasts have been completed for 2030 or 2050. However, there appears to be activity data in the LSA 2030 forecast spreadsheet that could be used to derive a 2030 displaced emissions forecast. ICF proposes to prepare the 2030 and 2050 forecasts using the methodology for the 2016 displaced emissions estimate but the assumptions will need to be developed by ICF in consultation with Metro.

ICF will identify proposed forecast activity data to be used for the 2030 and 2050 displaced emissions forecast and present that data to Metro for confirmation before completing the 2030 and 2050 forecast of emissions.

ICF's scope and budget does not assume any VMT modelling or projections by ICF be necessary to complete this task, but ICF will advise and review assumptions and the methodology used by Metro to project forward VMT data.

Task 2.4 Products

- Proposed forecast activity data for 2030 and 2050 forecast for Metro confirmation
- Advise on assumptions and methodology for VMT projections by Metro.
- All other work will be documented and reviewed in Task 2.5 and Task 7

Task 2.5—Inventory and Forecast Spreadsheets

Upon project commencement, ICF will consult with Metro staff to determine the appropriate MS Excel format for the inventories and forecasts. ICF will develop template(s) for revisions for Metro staff and will then modify the existing files (or create entirely new templates) accordingly. The goal of the revised template will make it easier to read and more accessible for Metro users than the current work products. The revised templates will then be used to hold the inventory and forecast data during Tasks 2.1 through 2.4 and will be delivered for review by Metro as part of this task. Reporting will be done as part of Task 7.

Task 2.5 Products

- Draft Internal Inventory and Forecast MS Excel Sheets for Metro Review
- Final Internal Inventory and Forecast MS Excel Sheets

Task 3: GHG Reduction Measure Analysis

Based on the material provided, LSA has completed or is in progress on the following related items:

- Carbon Neutral Goal Memorandum – A draft memorandum was prepared. Metro directed that it should not be finalized until after assessment of GHG reduction measures
- 2012 CAAP GHG Reduction Strategy Assessment – A partial draft LSA memorandum was prepared in July 2018 summarizing information about implementation to date of the eleven 2012 CAAP measures. A subsequent late August 2018 LSA memorandum identifies certain outstanding data needs to complete the assessment. Metro staff review identified that additional staff interviews, information collection, and analysis of lessons learned needed to be done to complete this assessment
- LSA “GHG Model” Spreadsheet – LSA developed an in-progress spreadsheet that appears to be intended for use in analyzing future GHG reduction measures that revolve around different fuel scenarios and emissions scenarios. The spreadsheet appears to also be intended to include future Metro service expansion projects.

Based on review of this material and given the Metro-identified need to complete a discrete scope of work by mid-April 2019 to allow for reporting of progress to the Metro Board, ICF assumes it will complete the following tasks:

- Develop a Candidate GHG Reduction Measure List
- Conduct an Internal Workshop with Metro Staff on the Candidate Measures
- Develop the Final GHG Reduction Measure List
- Evaluate the GHG Reduction Measures, including GHG and cost effectiveness
- Identify GHG reduction target options including a carbon neutral goal

ICF's proposed scope of work does not include the following tasks included in LSA's current scope of work:

- *2012 CAAP GHG Reduction Strategy Assessment*: ICF assumes the in-progress draft to be provided by LSA to Metro will be adequate to support the GHG reduction analysis.
- *External Stakeholder Outreach or Workshops*: This scope includes 3 presentations to the Metro Sustainability Council (GHG Reduction Strategies, Adaptation/Resiliency Strategies, Draft CAAP). Additional outreach or workshops are not included, for the sake of meeting an April 2019 schedule for completion.
- *Further Assessment of External Plans or Measures*: As part of preparation of updated 2030 and 2050 forecasts, ICF will need to take into account current status of the RPS, the LCFS, and vehicle efficiency standards. ICF does not see any utility in preparing any further technical memoranda summarizing review of external plans or measures at this time.

Task 3 Schedule

Our proposed schedule for this work is as follows:

- Candidate GHG Reduction Measure List for Metro Review – 10/19/18
- Internal Workshop on Candidate GHG Measures – week of 10/29/18
- Final Candidate GHG Measure List – 11/9/18
- Draft GHG Reduction Analysis – 1/11/19
- Metro Review of Draft GHG Reduction Analysis – 2/1/19
- Final GHG Reduction Analysis – 2/15/19

Task 3.1—Candidate GHG Reduction Measure List

As part of the 2012 CAAP effort, ICF developed a list of 50 potential GHG reduction measures that were assessed and ranked in terms of benefits, costs, implementation, timeframe, and data availability. A set of 17 measures was identified for analysis and potential inclusion in the 2012 CAAP based on their scores and applicability. Six (6) of the measures that would offset vehicle miles traveled were subsequently removed from the analysis following a decision to focus just on the remaining eleven (11) operational measures which were analyzed out to a 2020 horizon:

- On-board Storage of Regenerative Braking Energy
- Wayside Energy Storage Substations
- Mobile Air Conditioning Replacement
- Gasoline-Electric Hybrid Buses
- Biomethane in CNG Buses
- Facility Lighting Upgrades
- Expand Use of Renewable Energy

- Retrofit Lighting in Red Line Tunnel
- Municipal Recycled Water for Bus Washing
- Extension of Bus Wash On-Site Water Reclamation
- Low Water Sanitary Fixtures.

As the 2012 CAAP demonstrated, these measures were estimated to result in up to 175,000 MT annual CO₂ e reduction in 2020, including certain measures that were evaluated on a well to wheels basis.

These measures alone will not be sufficient to support future more aggressive GHG reduction targets, such as the SB 32 goal of 40% reductions in emissions (from a 1990 baseline) or the September 2018 Executive Order issued by Gov. Brown calling for the state to reach carbon neutrality by 2045. Since this scope of work includes assessment of 2030 and 2050 horizons, ICF presumes that the measures evaluated for Metro's operations will include measures not on the list of 11 prior measures above. These additional measures may include the following:

- Transit Operations
 - Vehicle Electrification
 - ◆ Metro Bus
 - ◆ Contracted Bus
 - ◆ Vanpool
 - Alternative Fueled Vehicles Beyond Hybrid Technology
 - ◆ Metro Bus
 - ◆ Contracted Bus
 - ◆ Vanpool
 - Renewable Electricity Purchase for Transit Operations > State RPS
- Facilities
 - Vehicle Electrification
 - Alternative Fueled Vehicles Beyond Hybrid Technology
 - Zero Net Energy Buildings
 - Renewable Electricity Purchase for Facility Operations > State RPS
 - Zero Waste
 - Employee Commute Vehicle Incentives
- Carbon Offset Program

ICF will develop a list of potential GHG reduction measures and then conduct a screening of them similar to what was done for the 2012 CAAP and will rank them in terms of benefits, costs, implementation, timeframe, and data availability. ICF will then provide Metro with a list of candidate GHG reduction measures for review.

Task 3.2 Products

- Draft Candidate GHG Reduction Measure List
- Meeting presentations and materials

Task 3.2—Internal Workshop on Candidate Measures

ICF will conduct an internal workshop on the candidate GHG reduction measures. We envision this as an all-day workshop with rotating Metro staff with expertise in different areas of Metro operations. We would start with a one hour workshop with the core Metro staff on this project and then conduct 4 targeted 1-hour sessions focused on transit bus fueling scenarios and technologies, electricity purchasing, facilities – buildings, facilities – other operations. As part of this workshop, we will also discuss lessons learned from the previous 2012 CAAP

development and implementation for the purpose of integration into the CAAP report and potential implementation needs. The day will be wrapped up with the core Metro staff summarizing what was heard and confirming next steps. We assume the workshop will be held at a cost-free location in Metro's building, and that Metro will coordinate securing the meeting room.

Task 3.2 Products

- Agendas, notes, and sign-in sheets for workshops
- Meeting presentations and materials

Task 3.3—Final Candidate GHG Reduction Measure List

The draft list of measures, ranking and recommendations will be revised based on the input provided by Metro and at the workshop. The final list may include measures not on the draft list. ICF will prepare a final list of candidate measures for further evaluation.

For the purposes of the ICF scope and budget, it is assumed that a total of 15 measures will be carried forward for further evaluation for the 2030 and 2050 horizon as part of this scope of work.

ICF proposes to present the final Candidate List to the Metro Sustainability Council.

Task 3.3 Products

- Final Candidate GHG Reduction Measure List
- Presentation to the Metro Sustainability Council

Task 3.4—Evaluation of GHG Reduction Measures

ICF will evaluate up to 15 GHG reduction measures using a similar approach to the 2012 CAAP.

The selected measures will be analyzed for their effect on Metro's GHG emissions in 2030 and 2050. This timeframe is used to allow comparison of their impacts with Metro's GHG forecast. The impacts of measures will be presented in terms of the key metrics of GHG emission reduced, costs to Metro, and cost effectiveness. Since GHG emissions have cumulative impacts on our atmosphere, cumulative reductions from the present year (2016) to the horizon years (2030 and 2050) will also be provided.

Costs of measure will be provided as three separate metrics. Upfront investment costs represent the initial investment required to implement any measure—typically comprising capital investment costs in new vehicles or equipment. Many measures have additional cost impacts after an initial investment is made—including maintenance and replacement costs, labor costs, disposal costs, and cost savings on electricity and fuel. All costs and savings accruing over multiple years will be represented as the net costs from 2016 to 2030 and 2050, using a 5% discount rate. In addition, costs will be calculated on a lifecycle basis to capture the full value of some investments and for consistency with the cost evaluation framework often used by Metro's Board and management.

For measures shown to save Metro money over their lifetime, we will also calculate the payback period for the measures. Lifecycle costs will generally be calculated for a single unit (e.g. per bus or per facility); GHG reductions and costs will be calculated assuming a specific phasing of implementation for the measures. All costs represented will be costs to Metro only, and will not include cost impacts to transportation users or other public agencies.

Cost effectiveness, or dollars per metric ton of GHG emissions reduced (\$/ton), will compare the cost and emissions impacts of measures. It provides a metric of the value for money that each measure provides in terms of GHG reductions. Cumulative reductions and net costs are used to calculate cost effectiveness.

ICF will also summarize key implementation factors for each evaluated measure. This will be a general assessment (e.g. approximately 1 page per measure) rather than a detailed implementation plan. The key factors will be as follows:

- Implementation Status
- Barriers to Implementation (other than costs)
- Level of Metro Control/Influence.
- Key Uncertainties
- Related Plans
- Action Steps

ICF will also evaluate packages of measures that reduce GHG emissions. To demonstrate the total impact that multiple measures could have together, six potential strategies, each consisting of multiple measures will be analyzed, as follows:

- Medium-Term (2030) Cost Saving Strategy
- Medium-Term (2030) GHG Effective Strategy
- Long-Term (2050) Cost Savings Strategy
- Long-Term (2050) GHG Effective Strategy
- Tank-to-Wheels Benefit Strategy
- Well-to-Wheels Benefits Strategy

ICF will consult with Metro staff to determine the appropriate MS Excel format for the GHG Reduction Analysis. ICF will develop template(s) for revisions for Metro staff and will then modify the existing files (or create entirely new templates) accordingly. The goal of the revised template will be make it easier to read and more accessible for Metro users than the current work products. The revised templates will then be used to hold the GHG reduction analysis and will be delivered for review by Metro as part of this task. Reporting will be done as part of Task 7.

ICF proposes to present the GHG analysis and the targets to the Metro Sustainability Council at an appropriate meeting.

Task 3.4 Products

- Draft GHG Reduction Worksheet Template
- Draft GHG Reduction Analysis (MS Excel Sheets)
- Final GHG Reduction Analysis (MS Excel Sheets)
- Presentation to the Metro Sustainability Council

Task 3.5—GHG Reduction Targets

After completion of the measure evaluation in Task 3.5, ICF will identify potential GHG reduction targets for Metro for 2030 and 2050. In addition, ICF will provide a general assessment of the potential for Metro to achieve carbon neutrality for its operations and the timing to do so.

The identification of 2030 and 2050 targets and the carbon neutrality assessment will take into account the GHG effectiveness, upfront cost, costs, payback period, barriers to implementation, level of Metro control/influence and uncertainties for the evaluated measures and packages of measures. ICF will identify a range of GHG reduction targets that will range in terms of these factors.

ICF will prepare a summary memorandum for Metro review. Reporting will be done as part of Task 7.

Task 3.5 Products

- GHG Reduction Target Options and Assessment Memorandum

Task 4—Adaptation

Task 4 Schedule

Our proposed schedule for this scope of work is as follows:

- Task 4.1, Risk Screening and Assessment: To be conducted in September and October 2018
- Task 4.2, Risk Management/Adaptation Planning: To be conducted October through January 2018

Task 4.1—Risk Screening and Assessment

Exposure maps have already been completed. ICF is prepared to make aesthetic changes to the maps, such as using new/different symbols, adjusting the call-out maps, and other adjustments to the visual presentation of the maps. ICF assumes that all GIS files, including those associated with the maps, will be provided by Metro.

Metro requested that ICF explore the possibility of incorporating a tree canopy analysis. Although we believe it is feasible to do this sort of analysis from a technical standpoint, we recommend against doing so at this time for budgeting purposes. We could revisit this topic once Task 5 and 6 are farther along and we can better assess available resources.

ICF will fill out the existing “CAAP Criticality_Vulnerability Matrix.xls” to complete a risk screening of Metro’s assets. For the Criticality portion of it, ICF assumes that Metro will provide data on ridership and transit-dependent populations. For the other criticality metrics, ICF will work with Metro to identify the most cost-effective way of completing these fields, which may involve soliciting input from key stakeholders within Metro, either via phone or email; it may be most cost-effective to hold a webinar-style discussion with 2-3 small groups within Metro to discuss criticality. For the Vulnerability component, ICF will develop an initial draft of the completed tool, drawing from information from the already-completed interviews with Metro staff (for which Metro has already provided interview notes and a summary), the 2012 CAAP, and the Resiliency Indicator Framework report. We will make note of information gaps. Then, we will fill the gaps and vet our draft results through either an in-person or virtual workshop with Metro staff; this workshop could be conducted in conjunction with the webinar-style workshops to assess criticality. The result will be a scoring for each asset type that ranges from 1 (no vulnerability) to 5 (extreme vulnerability).

We will consider vulnerability across two elements: vulnerability of the system assets themselves, and vulnerability of Metro’s ability to maintain customers and provide high quality customer service.

We will briefly summarize the key findings in a short memo, for which there will be one draft. Comments on the memo will be incorporated into the draft report text under Task 7. Other deliverables will include a completed version of the Excel vulnerability tool (draft and final versions).

Task 4.1 Products

- Brief (3-5 page) memo on vulnerability findings
- Draft and final matrix
- Final versions of risk maps (to be completed under Task 6)

Task 4.2 Risk Management/Adaptation Planning

ICF staff will evaluate the potential adaptation strategies outlined in the 2012 CAAP. We will also identify successful implementation and deficiencies, and recommend paths forward to not only accomplish previously proposed strategies, but also implement any new strategies that are recommended through this update to the CAAP.

We will do this work by first reviewing the previous CAAP, and the FTA-funded Climate Adaptation Pilot Program, as well as interview notes from the criticality/vulnerability interviews. We will make draft recommendations based on our experience assisting local transportation agencies with climate change resiliency. Then, we will fill information gaps by interviewing key staff within Metro, to learn what was and was not implemented, what barriers exist, what worked well or did not work well, and what additional strategies would be beneficial. This work will be summarized in a memo, and accompanied by either a table or an Excel spreadsheet that contains an organized matrix detailing the status of each of the previously recommended adaptation strategies. Metro comments on the memo and matrix will be incorporated when drafting text for the CAAP.

In this task, we will also review what climate resiliency looks like at metro and how it is measured. We anticipate coordinating this portion of Task 4.2 with the Resiliency Indicators Task Order that ICF is currently working on. Whereas that Task Order is looking at specific indicators, the work under this Task Order will consider bigger picture, more general definitions of resiliency. The purpose of doing this work will be to help ground the framework for evaluating potential adaptation strategies—i.e. the adaptation strategies ultimately selected should help further resiliency according to these definitions. ICF will review Metro's Resiliency Indicators report, initiate conversations with Metro staff, and use our own professional expertise to develop a narrative on this topic to be included in the CAAP.

To identify and evaluate strategies to include in the updated CAAP, ICF will take the following approach:

- First, we will develop a set of evaluation criteria against which all identified adaptation options are evaluated. The draft set of criteria will be developed based on our professional knowledge and discussions with the Metro project manager, as well as any relevant interview notes or relevant documents already developed under this project. We will then seek input from key stakeholders within Metro to make sure the criteria are appropriate, and will revise the criteria if needed.
- We will also develop a draft list of candidate adaptation measures, drawing from the past CAAP, already-complete interviews, other transit-focused resiliency studies, and our professional expertise. We will vet this draft list with the Metro project manager and other key Metro stakeholders, and revise it as necessary. For each adaptation measure, we will provide a short narrative describing the measure and what implementation of it would look like at Metro.
- ICF will then convene an in-person workshop with key internal Metro stakeholders to evaluate the adaptation measures against the criteria. This workshop will be approximately 2 hours in length, and involve small-group breakouts to help evaluate the various categories of adaptation measures within the allotted time; if feasible, we could also host two mini-workshops back-to-back instead of the larger workshop with breakout sessions. ICF will discuss the criteria and the resiliency metrics, and then lead a facilitated discussion and activity to evaluate each one of the adaptation measures. We will also seek input on how the strategy should be implemented and who would be responsible for it. ICF will prepare the meeting invitation, agenda, and all meeting materials. We assume the workshop will be held at a cost-free location in Metro's building, and that Metro will coordinate securing the meeting room.

- ICF will then convene a workshop with the Sustainability Council. The purpose of the workshop will be present findings on climate-related risks to Metro, present the proposed adaptation strategies, and then obtain feedback from the Sustainability Council on the proposed measures.

The results of these workshops will be used to draft text for the CAAP. (For budget and schedule reasons, we recommend drafting the CAAP text immediately rather than intermediary memos). The text will include the following information about the recommended strategies: description of strategy and the risk it is intended to mitigate, method of implementing the strategy, responsible party implementing the strategy, method of monitoring implementation/effectiveness, and adaptive management options to ensure effectiveness of the strategy.

Task 4.2 Products

- Draft text on “what does resiliency look like at Metro” to be included in the CAAP
- Draft and revised evaluation criteria for adaptation strategies
- Draft and revised list of adaptation strategies
- Workshop materials for the presentation to the Metro Sustainability Council
- Draft text for the CAAP on adaptation strategies

Task 5— Adaptation – Synthesize Climate Data for the LA Metro Region

Task 5 Schedule

Our proposed schedule for this scope of work is as follows:

- Exposure assessment to be completed October 2018
- New maps to be produced after completion of Task 4, approximately January or February 2019

ICF understands that the exposure analysis of Task 5 has been more or less completed. However, ICF will review the data sets used to make sure the most up-to-date data sets were used. If new datasets are available, ICF will update the existing exposure analysis.

Any changes to the exposure assessment will be incorporated in the updated exposure maps produced under Task 4. Therefore, Task 5 will be run concurrently with Task 4.

At the end of Task 4, ICF will also combine the exposure layers with the identified critical assets identified in Task 4. ICF will generate a set of maps that show exposure + critical & vulnerable assets (aka “risk” maps). This is recommended best-practice.

Task 5 Products

- Brief memo (1-2 pages) recapping our review of the data sets used for Task 5 and recommendations (if any) to update data sets
- Updated exposure analysis, incorporating new data sets (updated maps to be produced under Task 4)
- A draft and final set of ‘risk maps’ that highlight the exposure critical assets.

Task 6—Prepare CAAP

Task 6— Prepare Climate Action Plan

Our current proposed budget reflects the work noted below. Based on discussions with Metro on 9/27/2018, ICF may or may not need to take on a more involved role in the design and publication of the CAAP document. If our role needs to be expanded, we will work with Metro to revise the scope and budget accordingly.

Our proposed schedule for this scope of work is as follows:

- Chapters 2 through 3 to be drafted as relevant tasks are completed
- First full draft of CAAP to be completed by late February
- Second draft of CAAP to be completed by March 2019
- Final CAAP to be completed by early April 2019

ICF will review the already-drafted outline for the CAAP, and if needed, make suggestions for revisions. The current outline includes the following sections:

- Executive Summary
- Chapter 1: Introduction
- Chapter 2: GHG Emissions
- Chapter 3: Adapting to the Effects of Climate Change
- Chapter 4: Implementation Strategy
- Chapter 5: References

ICF will then draft chapters for the CAAP. Given the timeline, we can draft some chapters as relevant tasks are completed. ICF will use the template provided by Metro. We will deliver all chapters in Microsoft Word, and anticipate that Metro will provide the cover as was done for the previous CAAP. We have budgeted for three rounds of revisions total; we envision one round of revisions on individual chapters as they are prepared, and then another two rounds of revisions for the report as a whole.

If requested by Metro, ICF will also prepare materials for the presentation of the draft CAAP to the Metro Sustainability County and for presentations of the CAAP to the Metro Board. This work will include development of a PowerPoint and language to be included in staff report. If requested, ICF will also send at least one person to the Board meeting in person to help answer technical questions.

Task 6 Products

- Final CAAP outline
- First drafts of the Executive Summary and Chapters 1 through 5, delivered on a rolling basis as completed
- First draft of full CAAP, incorporating initial comments on the previously delivered draft chapters
- Second draft of full CAAP
- Final CAAP
- Presentation of draft CAAP to Metro Sustainability Council
- Draft and final PPT for Metro Board presentation
- Language to include in Staff Report on CAAP

Key Cost Assumptions

The following key assumptions have been made to the scope of work above in order to derive a cost estimate

- No new activity data collection will be necessary for the revision/update of the 2016 GHG internal or 2030 forecast for internal operations or the 2016 estimate or the 2030 forecast of displaced emissions.
- The inventory or forecast work will not require travel demand modelling or VMT modelling.
- Only one round of Metro review is included for any deliverable included in this scope. All Metro comments will be consolidated into a single set of consistent comments. Any major comments or issues highlighted in Metro comments will be resolved through over-the-shoulder review prior to finalization of the deliverable to avoid necessitation of additional rounds of review.
- The in-progress assessment of 2012 CAAP strategies will be adequate for the use by Metro and ICF in supporting subsequent work on GHG reduction measure evaluation.
- ICF will evaluate no more than 15 GHG reduction measures in detail (after screening down from a large candidate list). Each measure will require no more than 40 hours effort in evaluation in Task 3.4 in total. Any information that is not attained per measure will be highlighted as an item to develop in the subsequent and separate Implementation Plan Development Task Order.
- Metro will provide all available exposure and transit GIS layers in a format ready to use. If additional work is needed by ICF to make the layers compatible with the deliverables we are to produce, we will discuss with Metro options for shifting resources to the GIS work.
- Metro will provide data on ridership and transit-dependent populations in a format that is ready to use in the criticality assessment. Extensive processing of the data will require resources to be shifted into Task 5.2, or will require adjustments to the approach of Task 5.2.
- Since the ultimate goal of this Task Order is to produce a CAAP, we will focus resources on conducting the analyses behind the CAAP, and on producing text for the CAAP. Where possible, we have already (and will continue to) eliminate interim memos and reports, and instead move directly to drafting CAAP text.
- All workshops will be held at a cost-free location in Metro's building, and that Metro will coordinate securing the meeting room.
- When providing comments on any deliverable, Metro will internally consolidate comments and resolve any discrepancies before delivering a single set of comments to ICF.
- No deliverables others than those named above are included in the scope of work.