Friday, January 11, 2019 @ 9:00 – 11:00 am

Agenda

Metro Sustainability Council

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

Agenda

a. Welcome/Remarks: Chair (10 min)
   - Update on Vice Chair Nominations
   - New Council Member Introductions
   - MSIP Workshop Reminder
   - Introduction of Interim Chief of Staff, Nadine Lee: Rick (2 min)

b. Approval of Minutes: Chair (5 min)

c. Form an Ad Hoc Stipend Committee: Chair (5 min)

d. Draft Candidate Climate Adaptation Strategies Presentation: Andrina (20 min)

e. Oral Green Procurement Policy Update: Carolina/Craig (15 min)

f. GHG Inventory/Forecast Presentation: Evan (10 min)

g. Action Items Log: Aaron (2 min)

Los Angeles County
Metropolitan Transportation Authority

Metro

Friday, December 14, 2018 @ 9:00 – 11:00 am

Agenda

Metro Sustainability Council

LA Metro HQ
William Mulholland
15th Floor
One Gateway Plaza
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Agenda

a. Welcome/Introductions: Chair (5 min)
   - Meetings ARC Update
   - Vacant Seat Nominations Update

b. Approval of Minutes: Chair (5 min)

c. CAAP Workshop Introduction: Evan Rosenberg (10 min)

d. CAAP Breakout Sessions (55 min)

e. Breakout Sessions Recap (15 min)

f. DRAFT EV Implementation Strategy: Andrew Quinn (10 min)

g. Action Items Log: Aaron (2 min)

Los Angeles County
Metropolitan Transportation Authority

Metro

MEETING MINUTES

Sustainability Council Meeting

Friday, December 14th, 2018

a. Welcome/Introductions (Chair Small)

- Council members' self-introductions
- Community guests' self-introductions

Chair Small: Announcement. We are still working on nominations for Council vacancies, and more nominations can be emailed to Aaron Santos

> **Q: (Belinda Faustinos)** Recommendation to consider stipends for NGOs- we should look at these in more detail as NGOs are not funded to participate in workshops, but their participation adds tremendously.
>
> **A: (Stephanie Wiggins)** We do not provide stipends to NGOs because it is not financially sustainable, and other groups might begin to request financial support. However, Metro can look at partnerships with foundations or endowment to provide financial aid to NGOs that cannot attend without it.
>
> **A: (Chair Small**) We can revisit this discussion, and the earliest we can provide an update will be on February 8th.
>
> **Q: (Bruce Reznik)** Would like to know which sectors the nominations are coming from to ensure that there is enough representation of air quality, water quality, etc. Additionally, may have contacts in foundations that would be willing to help support NGO's attendance to workshops.

b. Approval of Minutes (Chair Small)

> No comments; Motion by Joel Levin, 2nd Motion; Minutes approved.

c. CAAP Workshop Introduction (Evan Rosenberg)

Hardcopy presentation and workshop materials are in the agenda packet.

> **Evan Rosenberg**: Welcome to the GHG mitigation kickoff.
>
> **Robert Kay:** Confirm that everyone has materials, and present logistics for group discussion- emphasis that we want to hear from the community, not only Metro staff and consultants.

(NEXT TOPIC)

> **Robert K.:** Introduces the focus questions:

- What support activities exist for partnerships & implementation pathways?
- Is there any prioritization to maximize GHG emissions in the short or medium term (up to 2030)?
- What are the priority measures for the longer time scale as Metro approaches a carbon neutral goal (up to 2045/2050)?

d. CAAP Breakout Sessions

Robert Kay: Council members/guests break up into the following groups for discussion:

- Energy Supply & Vehicles
- Buildings & Facilities
- Other Resource Areas

e. Breakout Sessions Recap

Jennifer Kropke: presents the points discussed by the "Energy Supply & Vehicles" Group

- Technology barriers can give room to some innovation opportunities
- How can the LA Metro pursue funding these opportunities, possibly by coordinating in the Sustainability Council?
- Concept of multiplier effect- Metro's leadership in the field of reducing GHGs is representative of how small steps can lead to a large leap in progress

Comment: (Joel Levin) We must look at impact of LA County as whole. For example, if Metro were running more EV buses, LA County's overall emissions will go down, even though emissions in certain sectors of Metro might increase.

Comment: (Jennifer K) The transition to an EV Bus Fleet is important when discussing overall distribution of resources

(NEXT TOPIC)

Pavitra Rommohan: presents the points discussed by the "Buildings & Facilities" Group

- We reviewed all 15 measures- some areas are within the scope of control of Metro, some are not.
- There is value in focusing on regulatory aspects, and rather than seeing them as obstacles, we can see them as opportunity for collaboration and expansion of scope.
- Added value of Joint use properties (parking lots, bus stops, etc.) as they present opportunities for treating runoff and can be tied to other areas such as energy.
- BMPs at existing Metro yards, such as re-use of runoff, which can be used for bus wash (currently being done at pilot level)
- Importance of incremental improvements across the board, as opposed to focus on just one program

- Importance of having a broader multidisciplinary approach to quantifying benefits

Comment: (Bruce Reznik) We have faith in Metro to identify current inventory, but there may be some opportunities that are missed when you only look at existing inventory

(NEXT TOPIC)

Roy Thun: Presents the points discussed by the "Other Areas" Group

- Metro is already underway to expand EV charging opportunities, new facilities will have it – how can they maximize the benefits?
- Currently, there are 25,000 parking spots with plans to add 2,500 EV charging spots.
- Importance of data collection, which is often overlooked- we can use data from existing EV charging stations to identify trends that would help us

Roy Thun: presents several ideas in the scope of EVs:

- EV valet parking lot, which would maximize efficiency by allowing more cars to be charged to desired level (i.e. a valet would remove the car from the charging station when the charge is complete, and plug in another vehicle)
- Integrated app, which would send a notification to users that their car is charged so they can move it and allow others to charge
- Mobility hub or "nexus for EV charging," which would look beyond the scope of electric cars and allow for charging of bikes, scooters, etc.
- Upgrade existing EV vanpool system

  Goes back to data, for example how many people are in the vehicle? This kind of data can capture more emissions savings than just data from the vanpool hub itself.

- Consider the idea of vouchers/incentives for bikes, EV cars, etc., as it seems that sustainability catered to the more affluent as they can afford the new technology
- Metro APTA protocol for sustainability- currently doesn't consider offset for land use and carbon emissions and co-benefits associated with increasing EV

Comment: (Rich Walter): The charging is not standalone, more participation in the transit system can be addressed in social equity scheme as well

Evan Rosenberg: Thanks to the Council for participation in this workshop. There will be continued analysis in the next few months, leading to a new CAAP draft in hopes of bringing it in front of the Board in June. This kind of discussion brings to light new ideas trends and identifies general areas of consensus.

Additional comments to be submitted on note cards to Aaron Santos.

f. Draft EV Implementation Strategy

Hardcopy presentation are in the agenda packet.

Andrew Quinn: Presents on Metro's EV experiences, as well as challenges and opportunities for growth in this area.

EV challenges include:

- Funding
- Interoperability
- Evolving market
- No dedicated staff or overarching strategy

EV opportunities include:

- 30,000 parking spaces owned and operated by Metro
- 7,500 employees driving to work
- Los Angeles is home to 25% of California's EV Chargers, with an ambitious goal of 250,000 EV chargers by 2025

EV Guiding Principles are currently structured around:

- Emphasis on positive consumer experience- simplifying the charging process
- Alignment with Metro's internal objectives
- Allocation of resources
- LACI Transportation Electrification Partnership program

EV 2028 Goals are:

- Install Level 2 charging stations for 10% of Metro employees who currently drive to work alone
- Install Level 2 charging stations for 70% of Metro's light non-revenue fleet
- Install Level 2 charging stations at 10% of Metro-owned parking spaces

Encourages discussion around the following questions:

- Are these EV goals appropriate?
- Are there other goals to think of?
- There is consideration of a charging rate increase to help with price recovery for EV charging operations, what is the general opinion in regard to this?

<u>Feedback and Comments</u>

Q: (Jennifer Kropke): request for clarification whether the rates in question are commercial or municipal?

A: (Andrew Q.) The data was procured from SCE, and they cannot disclose this information

Comment: (Will Wright) Your goal should be for employees to be able to use electric vehicles and not have to be concerned with the charging process.

Comment: (Doug Dietrich) You want to set up this process, so it doesn't only benefit the already affluent.

Comment: (Joel Levin) This is set up for people who don't charge at home.

Q: (Will Wright) We still need to focus on increasing EV usership, and the cost of installation that makes it a luxury item. Should we consider increasing more bus riding and use of public transportation?

A: (Joel Levin) Agreement that there is a large cost associated with the EV charging stations

Comment: (Joel Levin) We have more comments; how do we submit more detailed written comments?

Comment (Jennifer K., Joel L.): Discussion on timeline for comment submittal. Express need for more time to give insightful feedback on such an ambitious project.

Comment: (Cris Liban) clarification that these are comments for the Council, the schedule of comments to Board is somewhat flexible.

A: (Chair Small) Do we need to extend this discussion into the next meeting? It seems fruitful and worth re-visiting.

A: (Cris Liban) In agreement.

A: (Andrew Quinn) We will ask for comments before next Sustainability Council meeting, where this will be added into the agenda.

Comments to be submitted via email to Aaron Santos (SantosAa@metro.net)

g. Action Items (Aaron Santos)

- Revisit partnerships to help support NGO participation
- Provide an update list of Council vacancies
- Move motion 57 up to May or April

11:10am Meeting adjourned by Chair Small

LA Metro Climate Action and Adaptation Plan Mitigation Workshop

December 14, 2018

The following document summarizes and details the discussion points as part of the Metro Climate Action and Adaptation Plan (CAAP) greenhouse gas (GHG) mitigation workshop from the December 14, 2018 Sustainability Council meeting.

Energy Supply & Vehicles

- Biggest impact is replacing buses with electric buses – already part of Metro's zero emissions goal
  - Barriers to implementation: cost
    - However, Metro is firm on implementing this besides cost
  - Evan: This is still a measure because our inventory and forecast doesn't assume that Metro is going to do this; it's not funded or planned, doesn't meet the criteria that some Measure M projects do
  - Money isn't the only problem – newness is also a problem
    - You need bus to go over inductive plate chargers in a parking facility, but they can't since these chargers can't sink them into the ground (due to floor structure)
    - Questions on how quickly it can be implemented, challenges with new technology
    - No clear charging company, no standard yet for all the buses
    - Also: challenge of buses going up hills without opportunity charging
- What can Metro do for EV vehicles?
  - Provide charging opportunities for people who couldn't buy an EV before due to this problem; do this for Metro staff, possibly also for commuters
  - Suggest that employee commute be put as a high-impact measure, and also allow Metro commuters to do the same thing to make that high-impact
  - Scope 3 has not been in previous Metro inventories, now that we're bringing it in there's a measure about it
  - Something to be aware of: people might view this as fuel excise tax to fund a program for people (EV vehicle users) who aren't paying into the fuel system
- Buildings
  - Advanced lighting controls can have a big impact
  - Add complementary clean technologies to solar; you don't start with solar, you start with how you use your energy, and then step up to solar
  - There are infrastructure struggles with switching over to zero-emission but Metro had the same problem with CNG 20 years ago, so that shouldn't be a big barrier
- Metro has transitioned from diesel -> CNG -> renewable natural gas, next step is zero emissions

        - Metro decided to phase out diesel in early 90s and retired their last diesel bus in 2011, so note that the process can take a long time
        - Renewable natural gas is coming from landfills, plan on targeting even lower emissions natural gas (i.e. dairy/agriculture anaerobic digesters)
        - Changing the actual infrastructure is a totally different thing
    - Metro looking for opportunities with renewable electricity
        - Can we do contracts with solar/wind farms?
        - Metro works with 5 utilities; Munis (DWP, PWP, ALP, GWP), SCE
            - For SCE there are CPUC programs that Metro can participate in
            - In some cases the answer is yes, in other cases it depends on the program
    - Low-income communities
        - Most homes don't have enough amps to power EV vehicles, so how to handle that?
    - Would be great to see local solutions that could impact local communities
        - In-county offset opportunities, i.e. investments
    - Suggestions for the table (mitigation measures sheet)
        - Add a column saying if it's Scope 1, 2, 3, etc.
        - Add a column saying the current percentage of that measure meeting a goal, if there is one, to show progress
        - Vanpools are not Metro vehicles but are part of inventory, they subsidize lease between customer and vanpool company; example of Metro not having control over these vehicles, so when do they transition them? Need to come up with timelines
            - Metro will need to talk to them to make sure that needs their goals
    - Public communication and awareness can be incorporated in measures
        - How to encourage people to take more public transportation rather than driving?
        - Awareness education
    - How far along is Metro to joining a CCA?
        - About a third of Metro's energy supply comes from SCE. Metro properties that are in jurisdictions that have joined the Clean Power Alliance are already enrolled or to be enrolled.
    - Grants Department coordinates with Environmental to track money for VW funds, State of California funds
    - Cost-benefit analysis for identifying low-hanging fruit?
        - Doing that right now, part of feedback is helping to focus on easy implementation
        - Also, opportunity for Metro to play a leadership role in whole SCAG region; they make up a small fraction of emissions but can bring in so many more riders, or have an influence
            - Translates into bringing Scope 3 emissions into analysis
    - Need to coordinate all these areas with making zero-emissions buses, utilities, etc.
    - Report-out review
        - Barriers: technology, management, legal
            - Can Metro legally provide easement to SCE to access properties? I.e. charging infrastructure
            - Not big barriers, but might be specific to money

        - Procurement-related, i.e. contract terms
    - Opportunities to enhance coordination and transparency of grants
    - Rapid evolution already happening, so Metro is working on this
    - Multiplier effect: leadership for Metro
        - These are Scope 3 emissions, but there's real opportunity to promote EV vehicles, upgrades in low-income communities
    - Opportunities for partnership; Metro won't have to work on it by themselves
        - A lot of opportunities are competitive
    - Need to do some degree of Scope 3 analysis in gas vehicles and miles traveled; as Metro grows, fewer people will be driving these so need that analysis to tell that story

Buildings & Facilities

- Paired down list based on what's implementable
- Drainage management for facilities, is that still on the table, how do we add measures?
    - Measures are captured within umbrella of water reuse/recycling, etc.; need to get to one level lower, specific analysis assumptions needed to produce CBA/GHG estimate
- Local water systems are often gravity driven systems
- Used LADWP Urban Water Management Plan to calculate GHG footprint
- Great to start with top emissions sources; losing opportunities to offset water or create greenspace for carbon sequestration (co-benefits); net zero building is a limiting category; maybe make it broader to capture other elements
    - Recategorization/prioritization can be done now; haven't thought about co-benefits a lot but can easily fit into an implementation strategy
- Using permeable surfaces, replacing permeable pavements; can help with stormwater management and goal we are looking at
- Drainage you are trying to manage but can also look at systems under permeable pavement that promote healthy tree growth; drainage as a bioretention system
- Stormwater regulations mandate certain activities; municipal stormwater permit has treatment and capture goals; have no choice to comply, think about how good we make the system; what you do with the recaptured water on site is where the work should be; going beyond the 85% recapture goal, partnerships with local municipalities/agencies about what we do with that recaptured water; regional projects with Metro/Caltrans who both have to meet the requirements, offset costs, create greenspace; what other benefits to be made beyond regulatory requirements
    - Can look into what regulations do exist and what Metro could do to exceed standards are there; best management practices
- Value, revenue generation; what is added value to transform surface parking lot (terminals) but also programmed to recycle water/nursing watershed but also adding value to urban infill; every place with surface parking lot should be looked at for revenue generation and water systems; program opportunities for surface parking lot; joint development opportunities for surface terminals

- Design standards, retrofit standards, can look into thoughts/implementation challenges/benefits thinking through adding that value/extending value
- Filtration inside buildings; water inside buildings, dwarf anything from stormwater retention
- UCLA has cogen facility where they are generating gallons of water from HVAC systems from condensation, going into potable/nonpotable uses; potable water for landscape, toilets; can we build a system where we capture some of that condensate can be substantial amt of water if building large
- Realistic goal for reduction from BAU? Scaling up water recycling/reuse
- Look at current projects being monitored, Penmar Project, urban water/ dry runoff; TBL analysis needed to be connected to value added; use current projects as a basis
- Indoor/outdoor dichotomy; create new water from condensation; plumbing reduce potable; low flow; diminishing return to indoor water use projects; sewage system impacts, treatment plant issues, energy increases b/c need to pump more because more solid than liquids; outdoor runoff/irrigation gets more co-benefits to plant vegetation to improve habitat; question to goal: cannot answer the % reduction
- Metro has mandate that reduce potable water by 20% by 2017; did meet it; need to get further now; regional goal 22.5% by 2025(?); facilities meaning Metro or influencing other organizations
- Examples of Metro water projects at divisions: D. 13 cistern used for bus washing; partnership with jail, capturing water in cistern to use for bus washing activities; D. 14 has cistern used for train wash; D. 24 put in recharge system under parking; looking at landscape for putting in water controllers for irrigation; MOL using recycle water, want to use more purple pipe connections; 70% of water use comes from bus wash
- Any mini wastewater treatment systems being considered
- Have clarifiers that capture and reuse water, but RO water is problem area
- Can cycle water back into first stages of washing
- Focusing on facilities makes sense, but could gain credits with bus stops, not doing anything for watershed/urban heat; if could find way to improve them and get credits as revenue generation; possibility for upside to look at those as healthy places
    - Would this be long-term or near-term goal?
- This should be part of Measure W, need to prioritize this now
- What's the fastest way to reduce most emissions? Where would you start with facilities?
    - Net zero buildings not just net zero energy; net zero properties so we can talk about not just buildings but sites including parking lots; net positive properties that can offset the facilities that cannot generate enough energy on their own
    - Bus stops a good point; trust Metro to go calculations and prioritize measures to go for biggest bang for buck but loose multi-benefit; overall footprint of Metro is looking
- How to broaden inventory and capture these non-inventory items
    - What is our duty to report out and discuss and come to an agreement of?

    - Water is a small part of inventory, energy is a large, but we are not capturing co-benefits, need to adapt CAAP in future potentially
- Conservation and demand reduction is biggest long term operational impact; low rise building or lower sections of high rise building converting to condition free space (no ac/heat); lowering heating/mechanical load
- If it also happens to increase ridership add urgency to that
- Green infrastructure/co-benefits
- Key takeaways: co-benefits, discussion and quantification in BCA
    - Regulatory drivers, look at what those are and then identify this is what we have to do, and we do it, and then this is what we are doing above and beyond; helpful leverage for funding; use regulation as tool to push agenda; regulatory drivers in statue right now that says do X, outline all the I must have's, then modify those to maximize benefit, let driver be external regulations b/c has to be funded vs. pet project that doesn't have to be funded
- PVs are interesting, not on here for future buildings and building design; thinking on outside water and potential more so than inside water use; **multi** benefit projects

Other Resource Areas

- Strategically placed EV charging stations are meant to encourage and increase use of Metro buses and light rail.
- Capturing EV use data beyond Metro (e.g., City, County, State) could provide additional beneficial insights.
- EV valet service could address "charger squatting", freeing up chargers and reducing EV driver anxiety.
- EV vanpool as a cleaner alternative. May require reconsidering GHG reduction due to increased passenger count.
- EV app that notifies you when your vehicle has reached the desired charge level so you know when to move your car.

Plenary Report-out

- Energy Supply & Vehicles
    - Some technology barriers, but also opportunities to go along with those
    - Discussed money and funding opportunities, since there are money concerns with transitioning over to zero emission fleets
        - How Metro might use their resources to better pursue opportunities, coordinating with grants
    - Rapid evolution of fleet and technology that's evolving
    - Metro leadership in reducing GHGs in context of smaller things that lead to larger things, i.e. making charging infrastructure more accessible for commuters
        - What Metro is doing in the region as a whole and what's happening in other parts, such as ports
    - Don't just look at Metro's Scope 1 and 2 emissions, but its impact on the County as a whole; look at overall impact, which means also on Scope 3

- Buildings & Facilities
  - Discussions about water and energy savings
  - Also looked at opportunities outside buildings – how to value and quantify
  - Opportunities to broaden scope; measures are focused on Metro's inventories and activities
    - Partnerships with local agencies, cities, counties, who are faced with similar regulations
    - Value of focusing on regulatory aspects; how to collaborate to bring together
    - Measure W, parks measure, housing – opportunities for projects to coexist
    - Net zero buildings may cover many things but it's limiting to just stick to this list
  - Joint-use facilities – parking lots, bus stops
    - May not have a lot of control
    - Reusing runoff, related to energy
  - Existing activities – maintenance yards are reusing runoff
    - Prioritize continuing the activities they're already doing
    - Carrying out actions across multiple sites
  - HVAC
  - UCLA's satellite facility
  - Quantifying benefits – going from net zero to net positive categories
  - Eliminating scope when looking at sequestration
- Other Resource Areas
  - Partnerships and prioritization with charging stations
  - Metro is already underway in expanding EV charging capabilities
    - Metro has 25,000 parking spots, thinking of adding 2,500 more EV charging stations
  - Data collection – how to utilize existing infrastructure while still adding to new
    - Use Metro's data to best maximize this
  - Valet option – more efficient charging so people who need to charge can get it done while away from cars
    - Integrated charging app
  - Mobility hubs
  - EV vanpools
    - Right now, data is based on hours and amount of electricity at charging station; should also consider how many people per vehicle when thinking about offset
  - Expanding voucher system to public
    - Incentives for bikes, EVs
    - Expand into marketplace, especially for those who are underserved
  - Carbon capture

ATTENDEE LIST

ATTENDED	COUNCIL MEMBER	NOT ATTENDED	COUNCIL MEMBER
Y	Michael Samulon	N	Carolyn HULL
Y	Joe Ablay	N	Charles FAVORS
Y	Joel Levin	N	Cindy MONTANEZ
Y	Mark Kempton	N	Debra AVILA
Y	Thomas Small	N	Elizabeth RHOADES
Y	Roy Thun	N	Emily FREUND
Y	Salem Afeworki	N	Fernando CAZARES
Y	Bruce Reznik	N	Ghina YAMOUT
Y	Anthony Brower	N	Kristen TORRES-PAWLING
Y	Belinda Faustinos	N	Lauren FABER
Y	Hilda Blanco	N	Mark HUNTER
Y	Mehran Mazari	N	Michael SWORDS
Y	Rita Kampalath	N	Mike BAGHERI
Y	Kimberly Colbert	N	Omar GOMEZ
Y	Bryn Lindblad	N	Patricia MENJIVAR
Y	Jack Sahl	N	Peter MENG
Y	Doug Dietrich	N	Stephen CHEUNG
Y	Pavitra Rammohan	N	Steven JOHNSON
Y	John Williams	N	Wendy RAMALLO
Y	Bryan Pennington		
Y	Stephanie Wiggins		
Y	Richard Clarke		
Y	James Okazaki		
Y	Caryn Mandelbaum		
Y	Berwyn Salazar		
Y	Will Wright		

Sustainability Council
FY19 DRAFT Meetings Arc
As of *January 7, 2019*

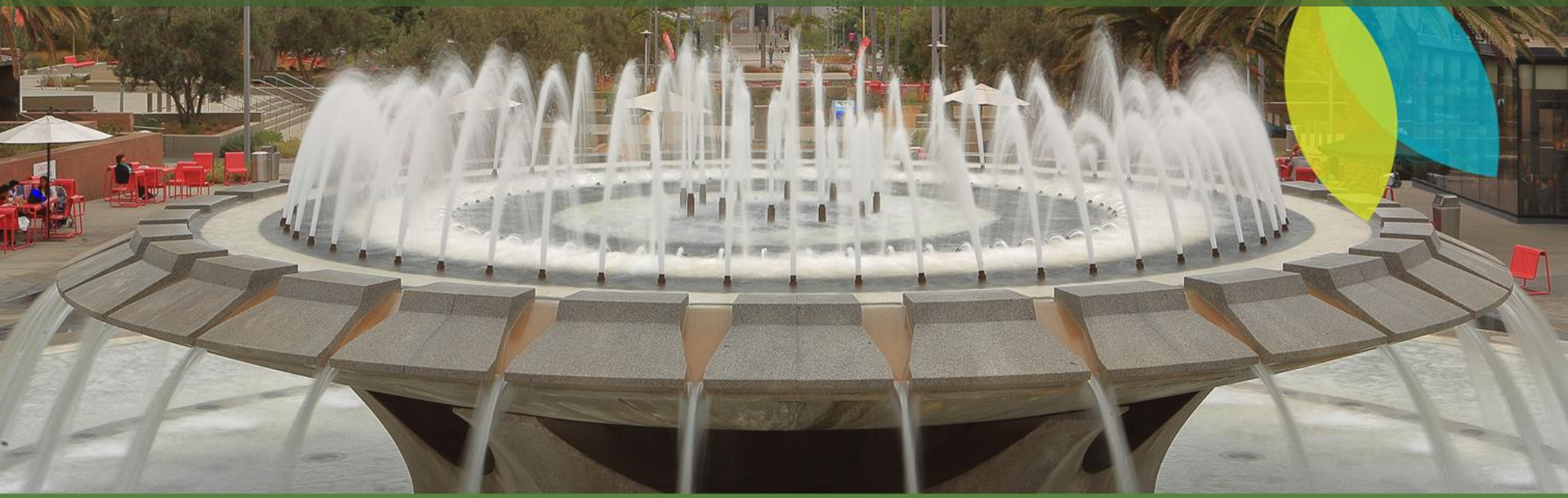
Meeting	Agenda Topics	Outcomes
September 21, 2018	*New Metro Role	*Bylaws amended to reflect new Metro role
	*Motion 57 Progress Update	*All participants leave meeting with a basic understanding of Metro's current progress related to Motion 57
October 12, 2018	*Introduce Climate Action Plan (CAAP) Update topic	*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
	*Oral Update on LRTP Outreach and Activities	*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

	*Introduce Green Procurement Policy topic *CAAP Workshop Prep	*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 * Distribute Council assignments to prepare for the December workshop discussion.
December 14, 2018	*CAAP Update: Introduce Candidate GHG Reduction Strategies *Draft EV Implementation Plan	*Direction provided from Council to Metro Staff on GHG reduction strategies in a workshop format *All participants will leave the Council meeting with a basic understanding of Metro's current practices related to EV charging, Metro's future EV charging goals, and challenges related to this topic.
January 11, 2019	*Present draft Candidate Climate Adaptation Strategies; continue discussions re: CAAP Update *Present update to the Green Procurement Policy * GHG Inventory/Forecast	*Feedback provided by the Council to Metro staff on draft Candidate Climate Adaptation Strategies; CAAP Update * Provide an update and receive feedback input on the methodology and results of GHG inventory
February 8, 2019	*Adaptation & Resiliency Workshop *Presentation on LRTP Values Framework	*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.

	* GHG Reduction Analysis *Draft Green Procurement Policy * County of Los Angeles Draft Sustainability Plan	*Provide an update and receive feedback from Council on the GHG Reduction Strategies *Feedback provided by the Council to Metro staff on the draft Green Procurement Policy *Feedback provided by the Council on County Sustainability Plan
March 8, 2019	*Metro Sustainability Implementation Plan (MSIP) Update (Draft) - Motion 57 Progress Update *Final EV Implementation Plan	*Consensus Comments received from the Council to Metro Staff on draft Chapters 1, 2, and 5 of the CAAP Update *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 as outlined in the MSIP update. *Consensus Comments received from the Council to Metro Staff on the draft EV Implementation Plan
April 12, 2019	*Adopt Green Procurement Policy *Receive & File Update of Motion 57 to the Metro Board	*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	*Adopt CAAP Update *Adopt Resiliency Framework	*CAAP Update recommendations & metrics adopted by the Council *Resiliency Framework recommendations & metrics adopted by the Council
June 14, 2019	*Metro Board approval of CAAP Update & Resilience Policy *Draft FY20 Meetings ARC	*All participants discuss potential policy topics for FY20 cycle

Metro Climate Action and Adaptation Plan (CAAP)

Risk Analysis and Adaptation Planning



Metro

January 11, 2019

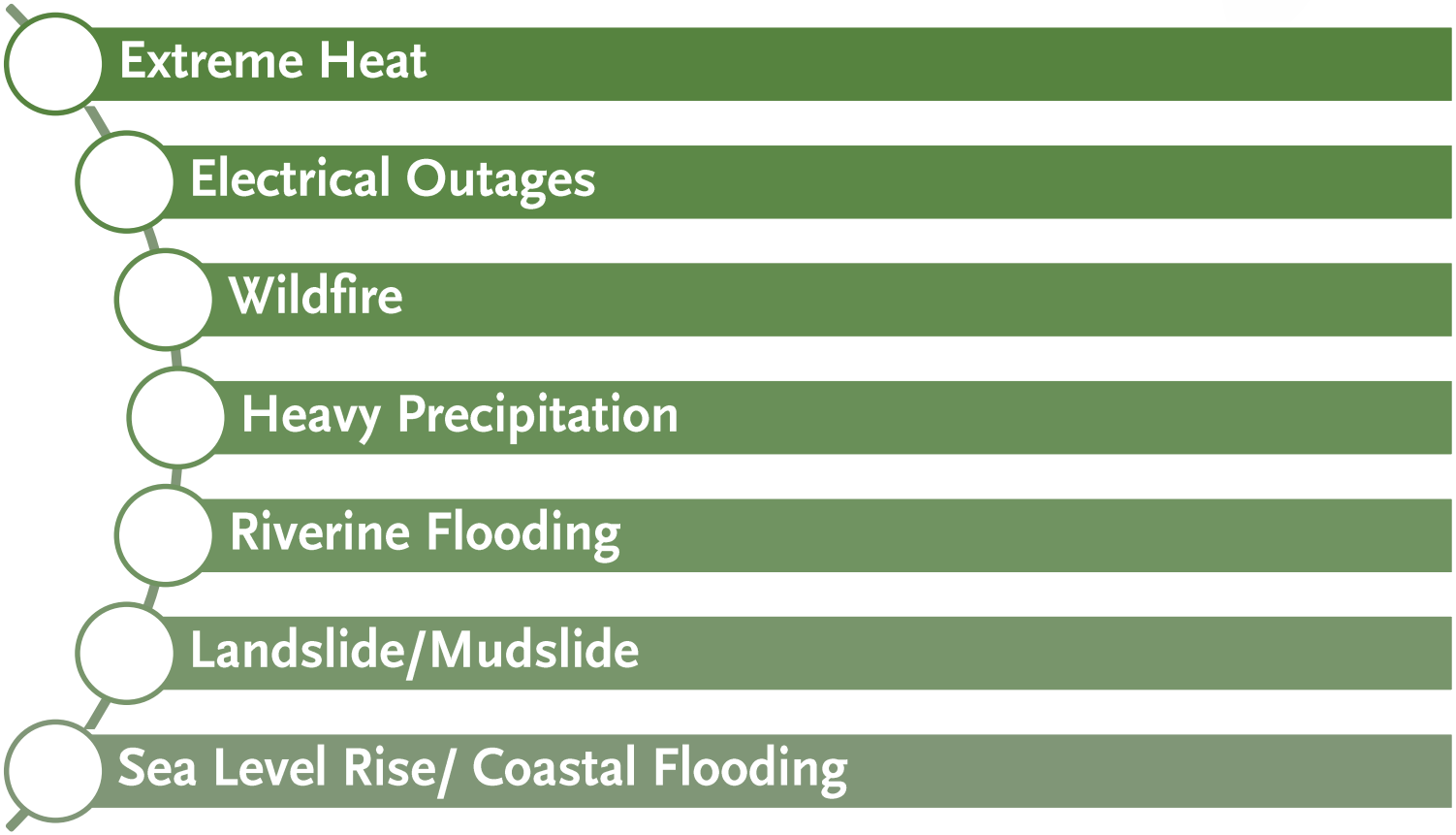
Project Overview

Month	GHG Inventory & Forecast	GHG Reduction Measures	Adaptation	Final CAAP
Dec	(-) Completed *final* inventory and forecast estimates	(-) Held Sustainability Council Workshop (-) Completed *final candidate measures list*	(-) Completed *draft* vulnerability and criticality assessment	
Jan		(-) Complete *draft* measure analysis	(-) Present *draft* to Sustainability Council	
Feb		(-) Complete *final* measure analysis	(-) Hold Sustainability Council workshop	(-) Complete *draft* CAAP
Mar			(-) Complete *final* vulnerability and criticality assessment	(-) Present *draft part 1* to Sustainability Council
Apr				(-) Present *draft part 2* to Sustainability Council
May				(-) Present *final* to Sustainability Council

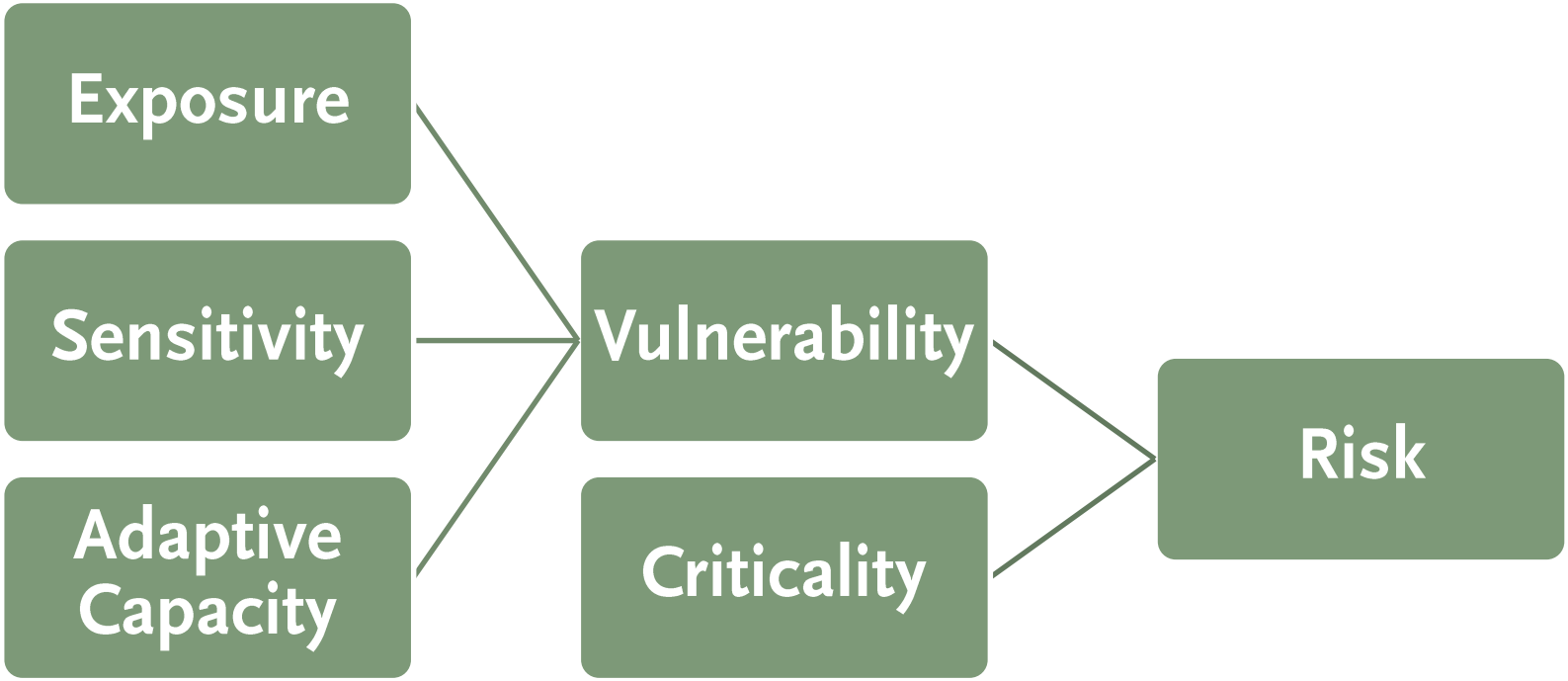
Presentation Introduction

- **Purpose of presentation:**
  - **Introduce preliminary climate risk analysis results**
  - **Outline adaptation pathways that are being developed between now and February's presentation**

Climate Hazards



Elements of Risk Analysis



Risk Analysis Methodology

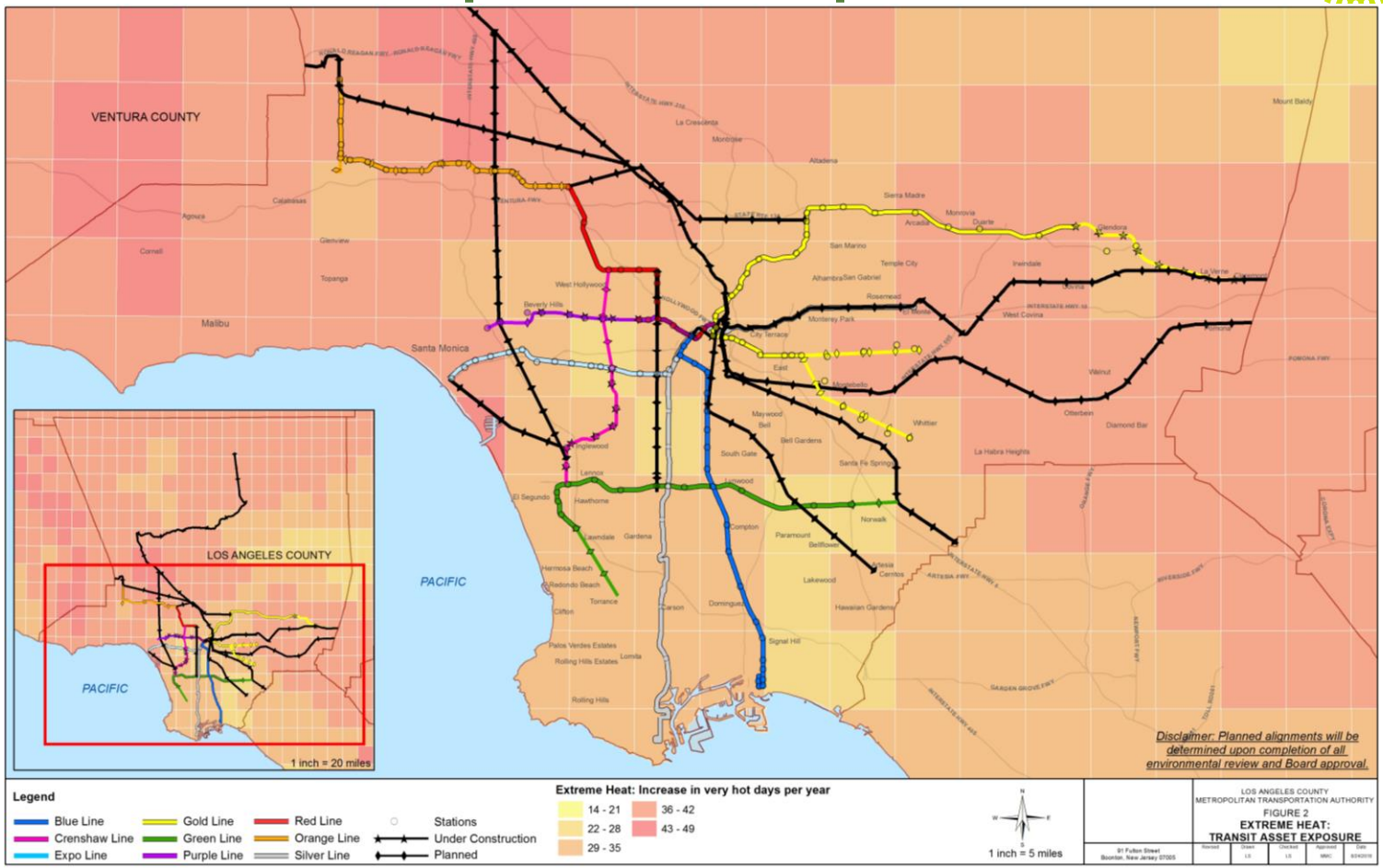
Element	Approach
Exposure	Score based on spatial analysis of hazards (Cal-Adapt projections, existing flood and landslide risk maps)
Sensitivity Adaptive Capacity	Score based on (in order of priority): • Interviews with Metro staff • Guidance from FTA and US DOT resources • Targeted research to fill in remaining gaps • Expert judgment of Metro and consultant staff
Criticality	• Definition based on 5 elements of vision in Long Range Transportation Plan: service, mobility, safety & security, sustainability, economic opportunity • Score based on criticality indicators for each of the 5 elements

The scores were combined to create an overall risk score for each asset.

Risk Analysis Result

Hazard	Results
Extreme Heat	Largest # of assets at risk
Electrical Outages	No assets at “extreme” risk, but some stations, rail/subway segments, and facilities have “high” risk
Wildfire	High risk to some, not all, assets
Heavy Precipitation	Risk overall fairly low, with some exceptions
Riverine Flooding	High risk to some, not all, assets
Landslide/Mudslide	High risk to some, not all, assets
Sea Level Rise/ Coastal Flooding	Fewest # of assets at risk, but exposed assets tend to have high risk
Wind	Risk not assessed because exposure not projected to increase

Extreme Heat Exposure Map



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Risk Analysis Discussion

- **Any initial reactions to these results?**
- **Any initial reactions to what should be priority risks to address, and how?**

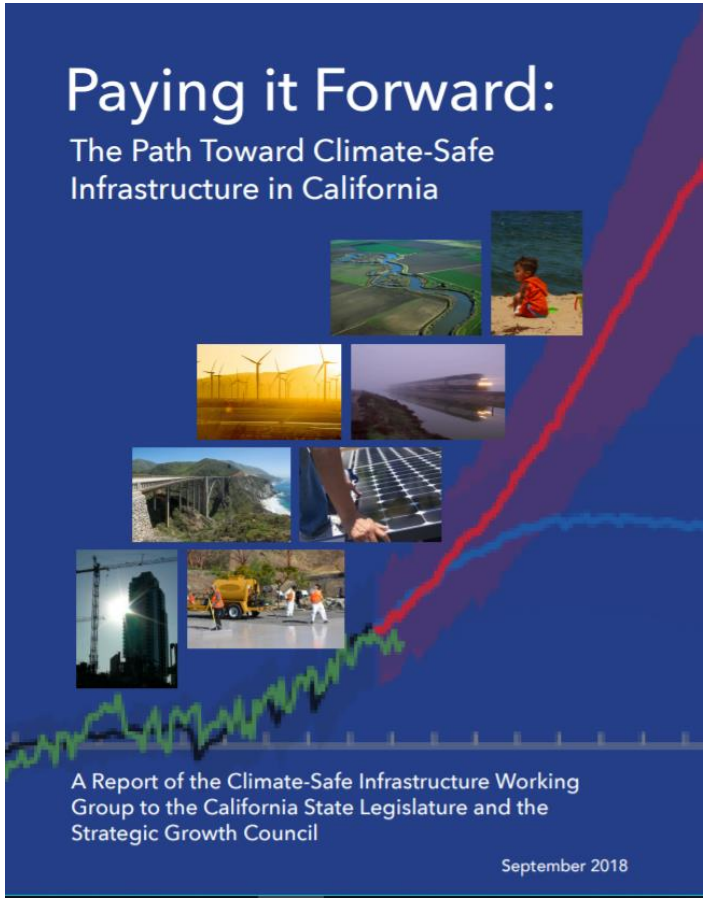
Adaptation Approach for 2019 CAAP

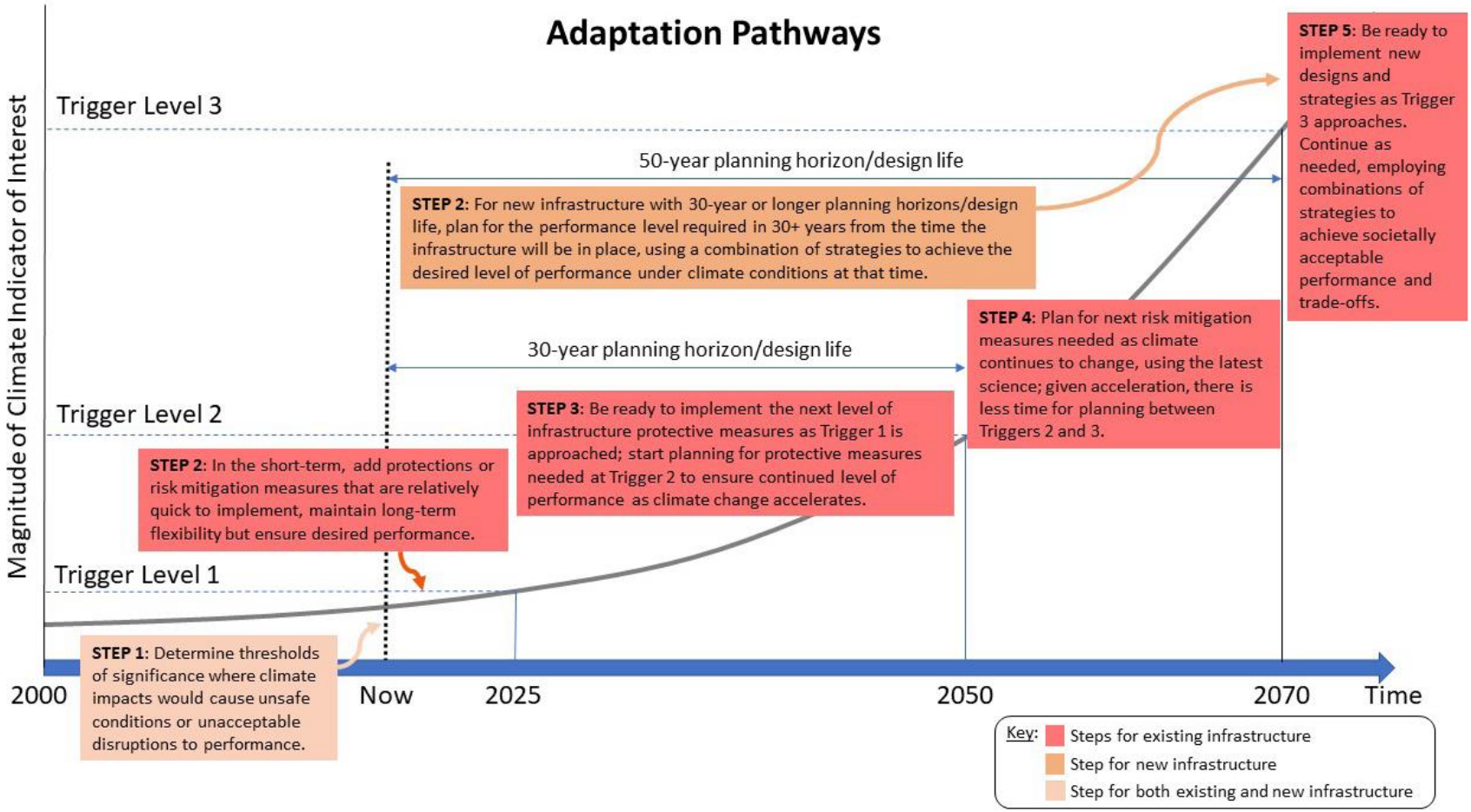
- **Collected examples of adaptation measures being implemented, examined, and considered at Metro**
- **Climate change adaptation practice looks at prescribing specific strategies to be implemented today to address potential future risks**
  - **How to include uncertainty in climate change projections, technology, demographics, human behavior, etc.**
  - **Risk of over- or under-investing in adaptation, or pursuing the "wrong" approaches**
- **Metro is developing *flexible adaptation pathways***

AB2800: *Paying it Forward* Report

- **Climate Safety Through Mitigation and Adaptation: The Climate-Safe Path**

- **Realizing the Climate-Safe Path One Step at a Time: Adaptation Pathways**




Adaptation Pathways
Magnitude of Climate Indicator of Interest
Trigger Level 3
Trigger Level 2
Trigger Level 1
50-year planning horizon/design life
30-year planning horizon/design life
STEP 1: Determine thresholds of significance where climate impacts would cause unsafe conditions or unacceptable disruptions to performance.
STEP 2: In the short-term, add protections or risk mitigation measures that are relatively quick to implement, maintain long-term flexibility but ensure desired performance.
STEP 2: For new infrastructure with 30-year or longer planning horizons/design life, plan for the performance level required in 30+ years from the time the infrastructure will be in place, using a combination of strategies to achieve the desired level of performance under climate conditions at that time.
STEP 3: Be ready to implement the next level of infrastructure protective measures as Trigger 1 is approached; start planning for protective measures needed at Trigger 2 to ensure continued level of performance as climate change accelerates.
STEP 4: Plan for next risk mitigation measures needed as climate continues to change, using the latest science; given acceleration, there is less time for planning between Triggers 2 and 3.
STEP 5: Be ready to implement new designs and strategies as Trigger 3 approaches. Continue as needed, employing combinations of strategies to achieve societally acceptable performance and trade-offs.
2000
Now
2025
2050
2070
Time
Key:
Steps for existing infrastructure
Step for new infrastructure
Step for both existing and new infrastructure

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Discussion

- **Initial reactions on adaptation pathways?**

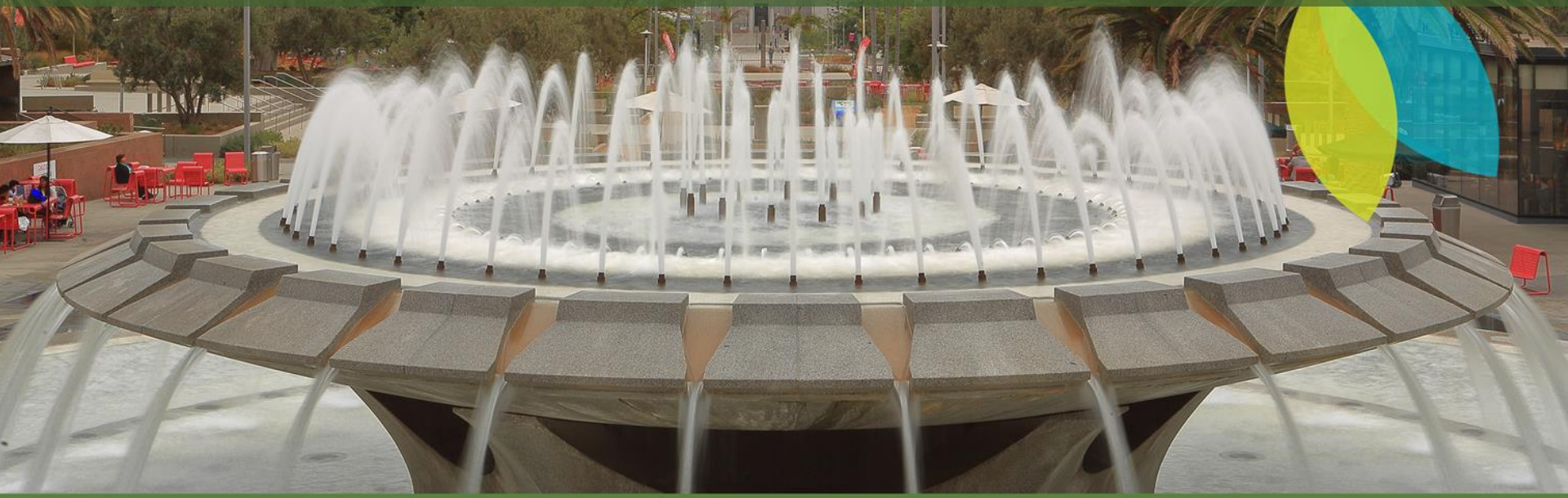
Next Steps

- Internal Metro workshop to develop adaptation pathways
- February Sustainability Council Meeting:
  - Adaptation pathways will be presented
  - Interactive small group sessions to solicit feedback on
    - key partnerships,
    - potential opportunities/barriers, and
    - Implementation
  - Small groups will cover:
    - Operations/Maintenance & Asset Management
    - Procurement
    - Design

Thank you!

Metro Climate Action and Adaptation Plan

Update on GHG Emissions Inventory & Forecast – Sustainability Council



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January 11, 2019

CAAP GHG Mitigation Section

- **GHG Emissions Inventory & Forecast**
  - Updated 2017 GHG Inventory
  - Analysis of 2010-2017 GHG Trends
  - 2030 & 2050 GHG Forecast
- **GHG Mitigation Measures**
  - Incorporating feedback from December SC workshop (Thank You!)

CAAP GHG Mitigation Section

- **GHG Emissions Inventory & Forecast**
  - Updated 2017 GHG Inventory
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- **GHG Mitigation Measures**
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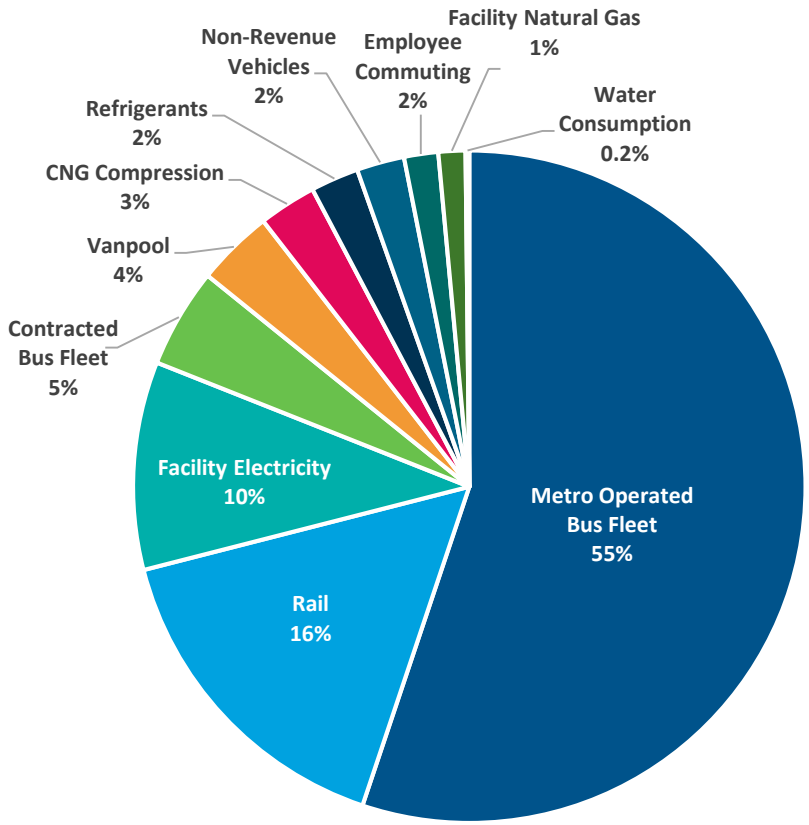
Updated 2017 GHG Inventory

GHG Emissions



*Reported Emissions:	390,251
Updated Emissions:	425,528
	(MT CO_2e)

Key Differences Relative to the 2018 Energy & Resource Report

- Utility specific emissions factors rather than regional grid average (increase)
- New activity category – Employee Commuting (increase)
- Updated/revised activity data (increase)
- Biogenic GHG from Renewable Natural Gas (decrease)

*LA Metro. 2018a. *2018 Energy & Resources Report.* Available: http://media.metro.net/projects_studies/sustainability/images/report_sustainability_energyandresource_2018.pdf.

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Updated 2017 GHG Inventory

GHG Displacement

Source	*Reported	Updated	Justification
Mode Shift to Transit ($MT\ CO_2e$)	431,009	209,295	Updated mode shift factor from *Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit* (APTA 2018)
Land Use ($MT\ CO_2e$)	-	820,640	Added displacement source from Transit Cooperative Research Program's (TCRP) Land Use Benefit Calculator (2014)

*LA Metro. 2018a. *2018 Energy & Resources Report.* Available: http://media.metro.net/projects_studies/sustainability/images/report_sustainability_energyandresource_2018.pdf.

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Updated 2017 GHG Inventory

GHG Displacement – Net Emissions Calculation

*Reported	
Total Emissions:	390,251
Total Displacement:	(431,009)
NET EMISSIONS:	(40,758) ($MT CO_2e$)

Updated	
Total Emissions:	425,528
Total Displacement:	(209,295)
NET EMISSIONS:	216,233 ($MT CO_2e$)

Updated** (Including Land Use)	
Total Emissions:	425,528
Total Displacement:	(1,029,935)
NET EMISSIONS:	(604,407) ($MT CO_2e$)

**GHG Displacement from Land Use is NOT an accepted practice per APTA Recommended Practice

*LA Metro. 2018a. *2018 Energy & Resources Report.* Available: http://media.metro.net/projects_studies/sustainability/images/report_sustainability_energyandresource_2018.pdf.

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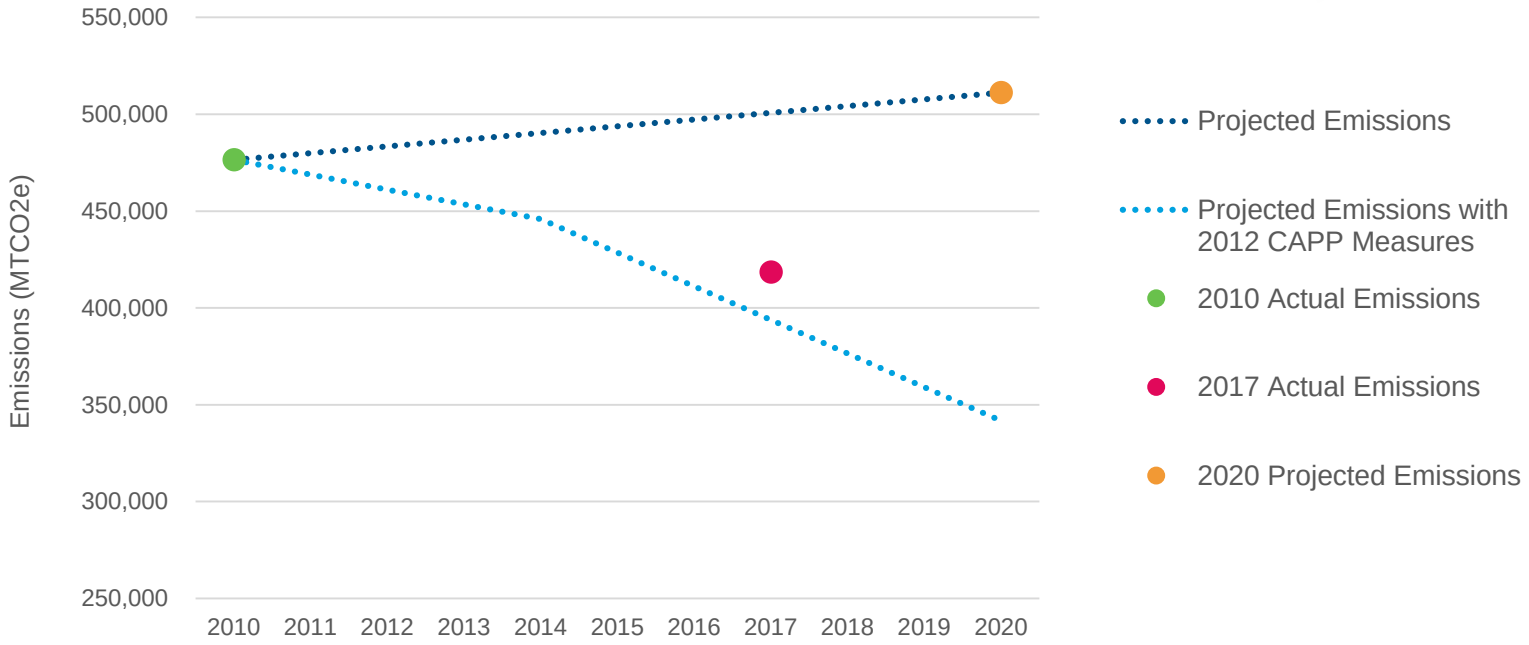
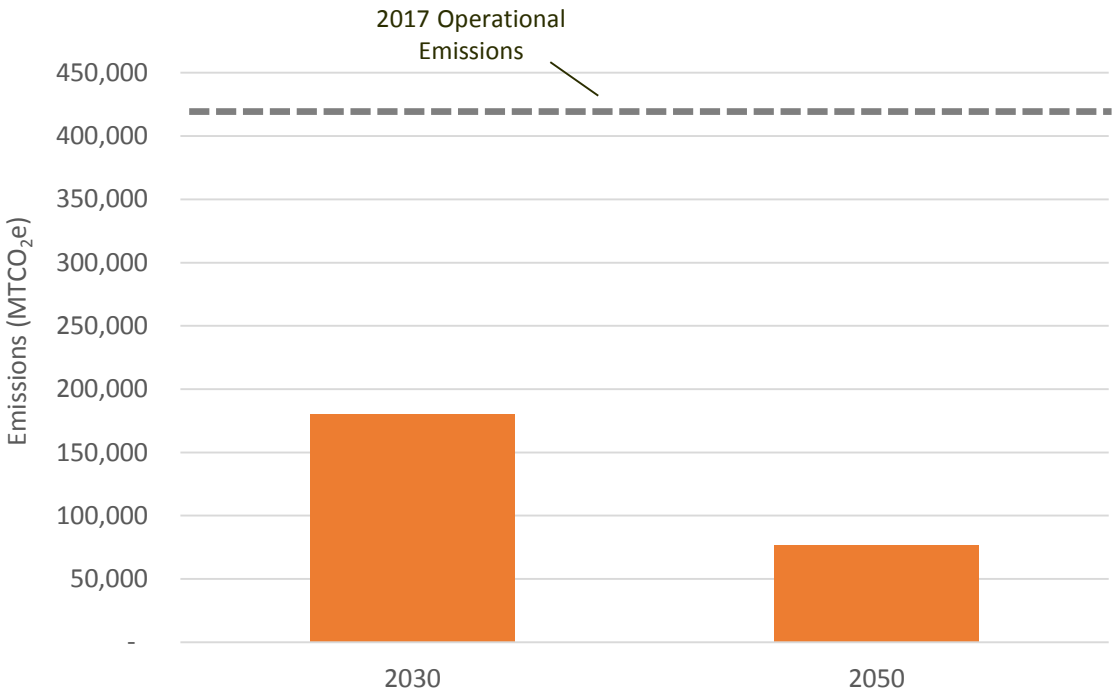
Analysis of 2010-2017 Trends



2030 and 2050 GHG Forecasts

Preliminary BAU Forecast – GHG Emissions



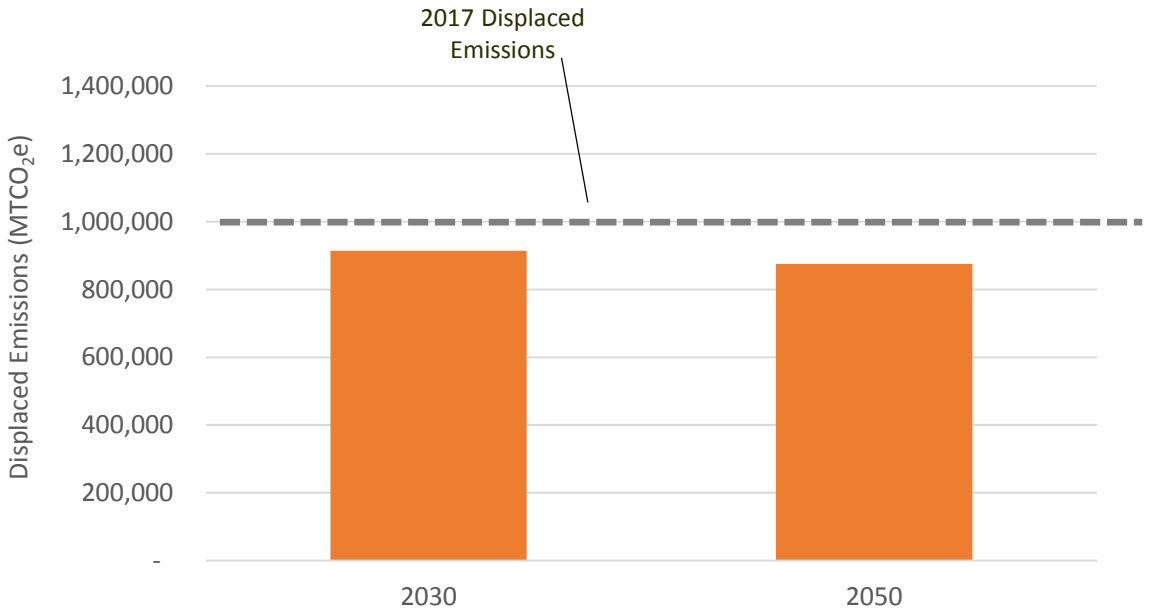
"Business-As-Usual" Scenario:

- Service expansion (e.g. Measure M)
- Fuel Switching (e.g. RNG/ZEB*)
- Existing national and state policies (e.g. SB100, SB1013, CAFE)

*MOL & MSL only

2030 and 2050 GHG Forecasts

Preliminary BAU Forecast – GHG Displacement



- Federal CAFE standards offset impacts of new transit projects

Thank you!

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Action Items Log

Meeting Date:	Status	Council Member	Comment	Metro Response
14-Dec-18	Closed	Belinda Faustinos	Request to look further into partnering with other organizations to see if its feasible to provide stipends to NGO's.	DONE: Metro does not provide compensation to Council members, but would be glad to provide information.
14-Dec-18	Closed	Bruce Reznik	Request to move the Receive and File Update of Motion 57 to the Metro Board to provide sufficient time for discussion on Motion 57 Progress Update.	DONE: Receive and File Update of Motion 57 to the Metro Board has been moved to the 4/12/19 SC meeting as reflected on the ARC.
14-Dec-18	Closed	Bruce Reznik	Request to provide a list of vacant seats that did not receive nominations.	DONE: The Council's membership list provided on 1/3/19 was updated to reflect current vacant seats.
12-Oct-18	Closed	Caryn Mandelbaum/Bruce Reznik/Belinda Faustinos	The EJ seats remain vacant. To receive better participation from the EJ group, can we explore possiblity on partication stipends.	DONE: Metro does not provide stipends to Council members but now that we have received two applications for the EJ vacancies, we have full primary participation in all categories from NGO's.
12-Oct-18	Open	Belinda Faustinos	Update on the RAMP/RCIS plan	IN PROGRESS: Working to schedule an update on the plan's implementation on the ARC.
12-Oct-18	Open	Michael Samulon	Encourages Metro to include an annual benchmarking against the updated path to reach numbers on the CAAP	IN PROGRESS: Currently under consideration.
12-Oct-18	Closed	Joel Levin	Incorporation of LA Metro EV Implementation Plan on Meetings ARC	DONE: Has been added to the ARC for the 12/14/18 meeting.
12-Oct-18	Closed	Hilda Blanco	Thoughts on publishing the CAAP	DONE: Once CAAP is approved, it will be posted on Metro's website.
12-Oct-18	Closed	Caryn Mandelbaum	Request of a timeframe on Motion 57 updates	DONE: Motion 57 Progress Update is scheduled for the 3/8/19 meeting. We will provide monthly informal updates.
12-Oct-18	Closed	Michael Samulon	Request to provide an LRTP Toolkit	DONE: Was sent to council members on 10/24/18.

Meeting Date:	Status	Council Member	Comment	Metro Response
12-Oct-18	Closed	Bruce Reznik	Request to provide Paul Backstrom's notes on LRTP Update	DONE: Notes attached to the Meeting Minutes for 10/12/18.
21-Sep-18	Closed	Bryn Lindblad	Request of a Meetings ARC	DONE: Provided Meetings Arc at the 10/12/18 meeting.