

Award-Winning Sustainability

2018



November 14, 2018
CM | 1.5 (live viewing only)

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CLARION

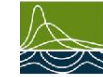
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ASSOCIATES



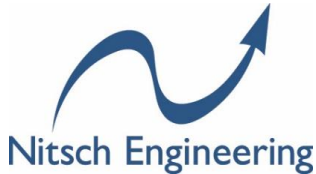
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Interested in sponsorship?

Contact Merrill St. Leger Demian (Merrill.StLegerDemian@smithgroup.com)



Division Information

Contact

Website: planning.org/divisions/sustainable

Blog: www.sustainableplanning.net

LinkedIn: APA Sustainable Communities Division

Facebook/Twitter: APASCD

Email: APASCD@gmail.com



Today's Event

Award-Winning Sustainability 2018

Michael Burnham | Senior Planner, Thurston Regional Planning Council

Dr. Cris B. Liban, P.E. | Executive Officer, Environmental Compliance and Sustainability, LA Metro

Juliet Burdelski | Director of Economic Development, City of Meriden, CT

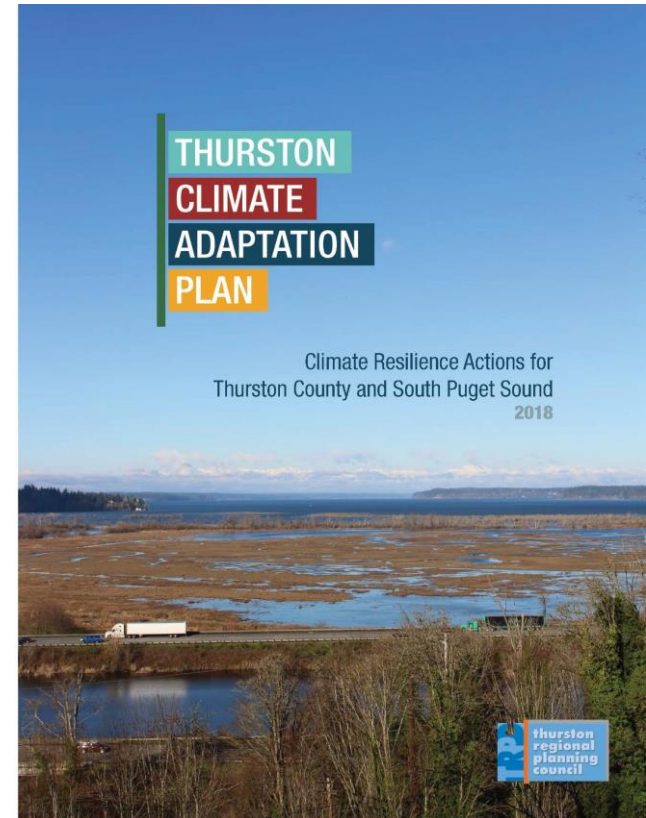
Robert Seale, AICP | Director of Development and Enforcement, City of Meriden, CT

Woo Kim, AICP | Principal, WRT



State or Regional Sustainability or Resilience Plan

- Thurston Regional Planning Council
- **Thurston Climate Adaptation Plan**
- Olympia, Washington



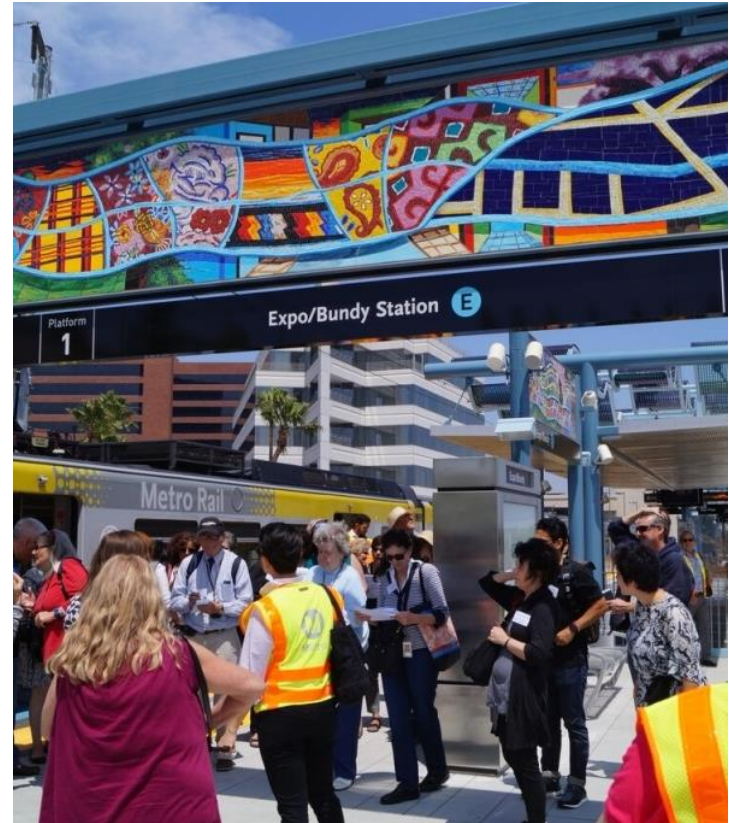


Sustainable Transportation Project

- Los Angeles County Metropolitan Transportation Authority
- **Metro Expo Line Phase 2**
- Los Angeles County, CA



MetroTM



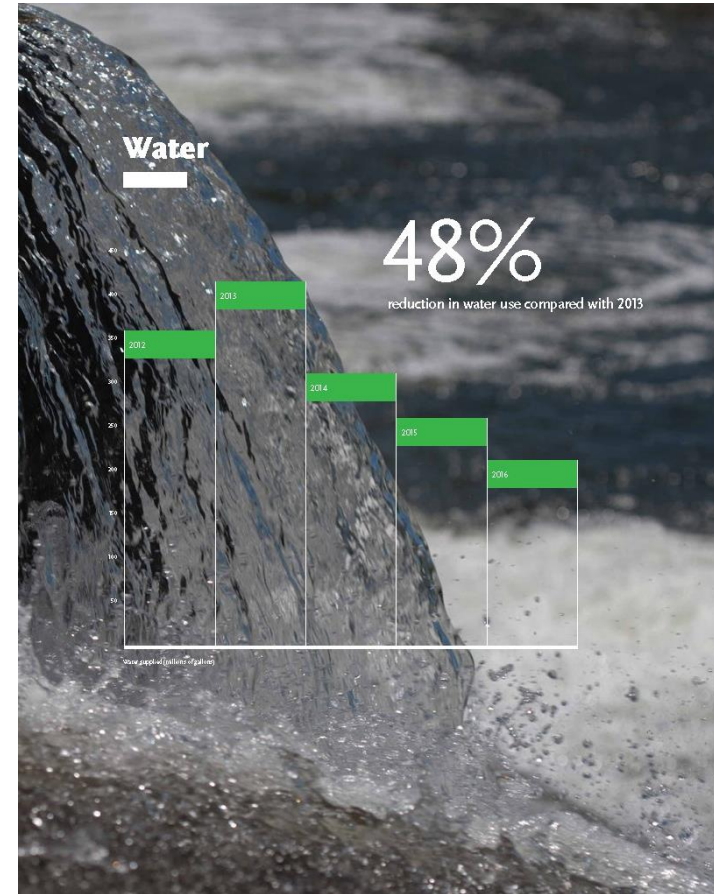


Leadership in Sustainability

- **Environmental Compliance & Sustainability Department**
- Los Angeles County Metropolitan Transportation Authority
- Los Angeles County, CA



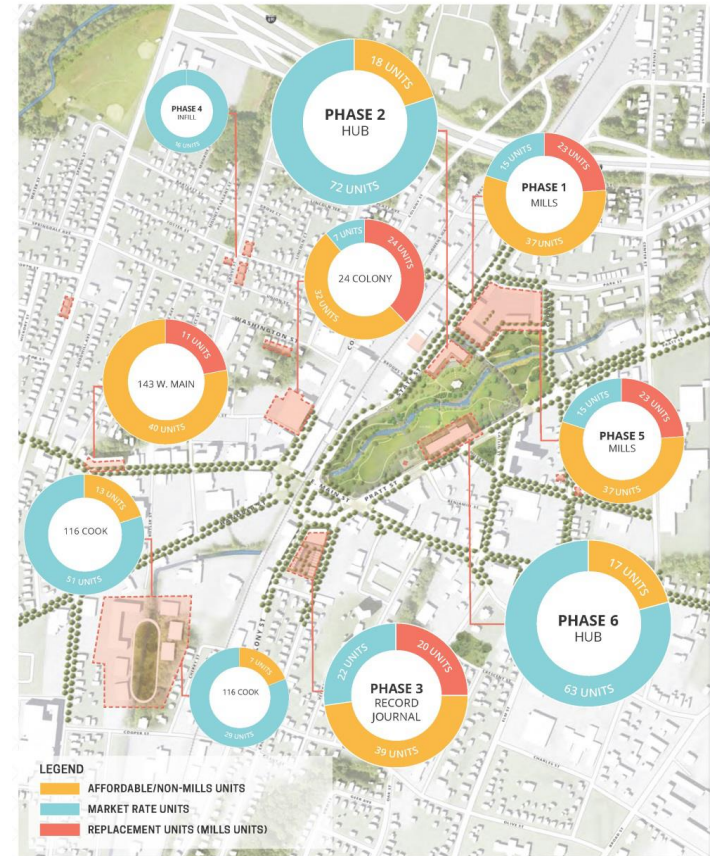
MetroTM





Sustainable Urban Design Plan or Development Project

- City of Meriden
- **Meriden 2020**: A Comprehensive Plan for Downtown Meriden
- Meriden, CT





2019 Awards Overview

- The nomination period for the Sixth Annual Awards for Excellence in Sustainability is open through January 11, 2019.
- Information packet at sustainableplanning.net or planning.org/divisions/sustainable/awards/





Eight Categories

- Community Sustainability or Resilience Plan
- State or Regional Sustainability or Resilience Plan
- Sustainable Policy, Law, or Tool
- Sustainable Park, Recreation, or Open Space Plan or Project
- Sustainable Green Infrastructure Plan or Project
- Sustainable Transportation Plan or Project
- Sustainable Urban Design Plan or Development Project
- Leadership in Sustainability



What's New for 2019?

- Submission via web form
 - Word template provided
- Required letter of support

APA
Sustain

Sixth Annual Awards for Excellence in Sustainability

Nomination Form

The Sustainable Communities Division (SCD) of the American Planning Association is pleased to announce the opening of the nomination period for the Sixth Annual Awards for Excellence in Sustainability.

Before you continue, **PLEASE REVIEW** the information below:

1. Please review the [full information packet](#), including eligibility requirements, before you begin. (The link goes to the SCD website.)
2. You must fill out the form all at once (i.e., you cannot save and come back).
3. We suggest you utilize [this Word document](#) to prepare the text that you will need to provide prior to starting the form.
4. If you submit the form once and would like to re-submit before the end of the nomination period, please feel free to do so. We will review only the most recently-completed form.
5. We will keep track of any FAQs and process updates on the blog site (<https://apascd.wordpress.com/awards/>). If you would like to be directly notified of any updates, please send an email to the awards coordinator at jenniferk@rhodeside-harwell.com, with the subject line "SCD Award Updates".
6. Entries will be accepted no later than **5:00 p.m. (EST) on Friday, January 11, 2019**.

1. I've read the above and I'm ready to complete the nomination form!

Yes

Next

Powered by
 SurveyMonkey
See how easy it is to [create a survey](#).

[Privacy & Cookie Policy](#)



Notice of Updates or Clarifications

- We will keep track of FAQs on the blog (sustainableplanning.net)
- If you would like to be directly notified of any substantial updates, please send an email to the awards coordinator (jenniferk@rhodeside-harwell.com), with the subject line "SCD Award Updates"



THURSTON

CLIMATE

ADAPTATION

PLAN

Project Overview

Nov. 14, 2018

TRPC, at a glance

- ▶ **What:** Regional Planning Organization in Olympia, WA
- ▶ **Who:** Council of governments includes tribes, cities, transit, fire districts, schools, etc.
- ▶ **Why:** Adopted *Sustainable Thurston* in 2013:
 - ▶ **Purpose:** Enhance sustainability
 - ▶ **First Step:** Work on climate change





Project Snapshot

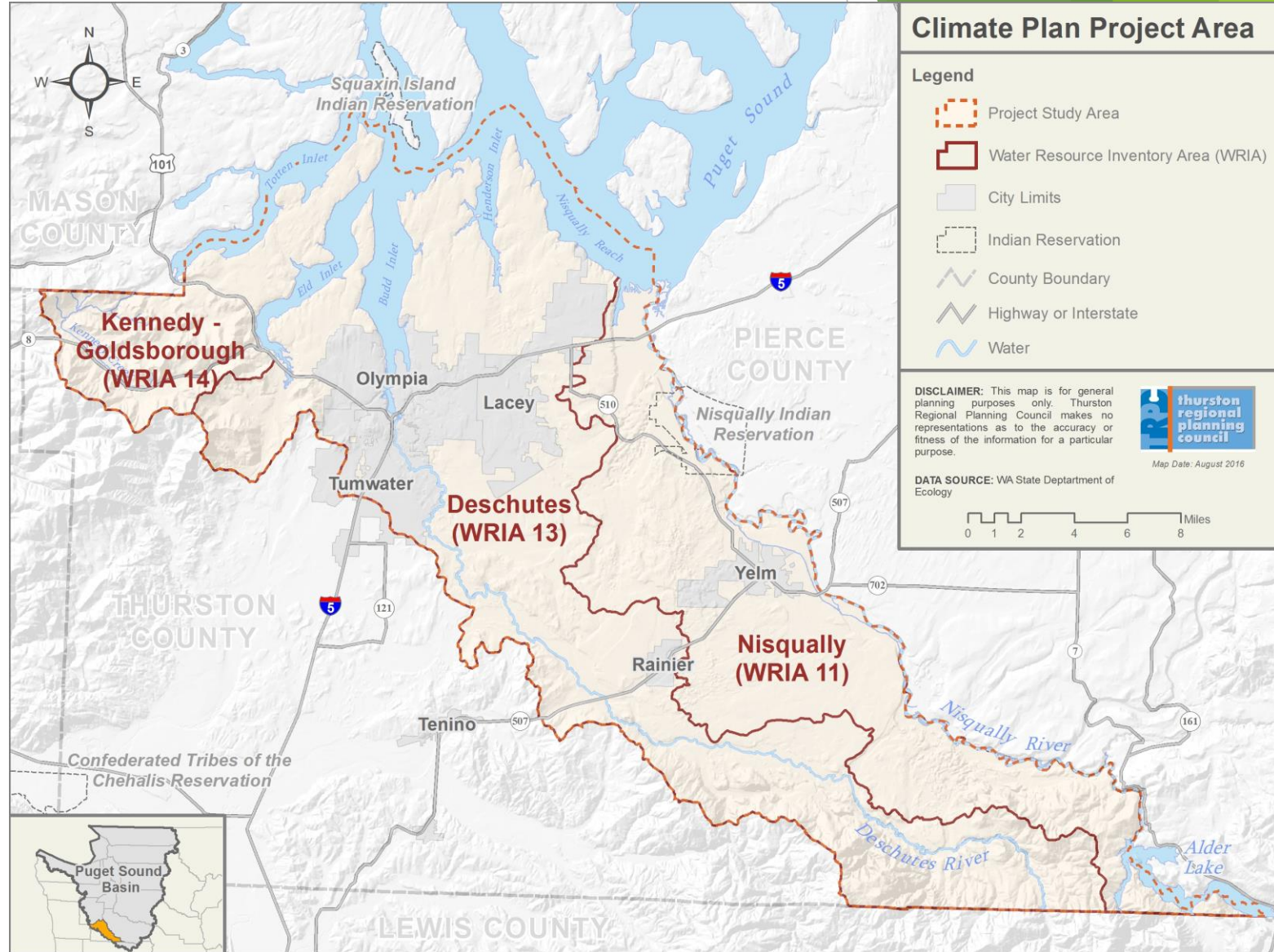
THURSTON

CLIMATE

ADAPTATION

PLAN

- ▶ **Funding:**
 - ▶ \$250K National Estuary Program grant
- ▶ **Project Area:**
 - ▶ South Puget Sound watersheds (WRIAs)
- ▶ **Policies:**
 - ▶ Actions for local municipalities, businesses, neighborhoods, etc.
 - ▶ Actions could be taken across Puget Sound ... and beyond





Science Summary

► What:

- Describes observed and projected climate impacts at global, national, regional scales
- Incorporates research from IPCC and other sources

► Why Adaptation?

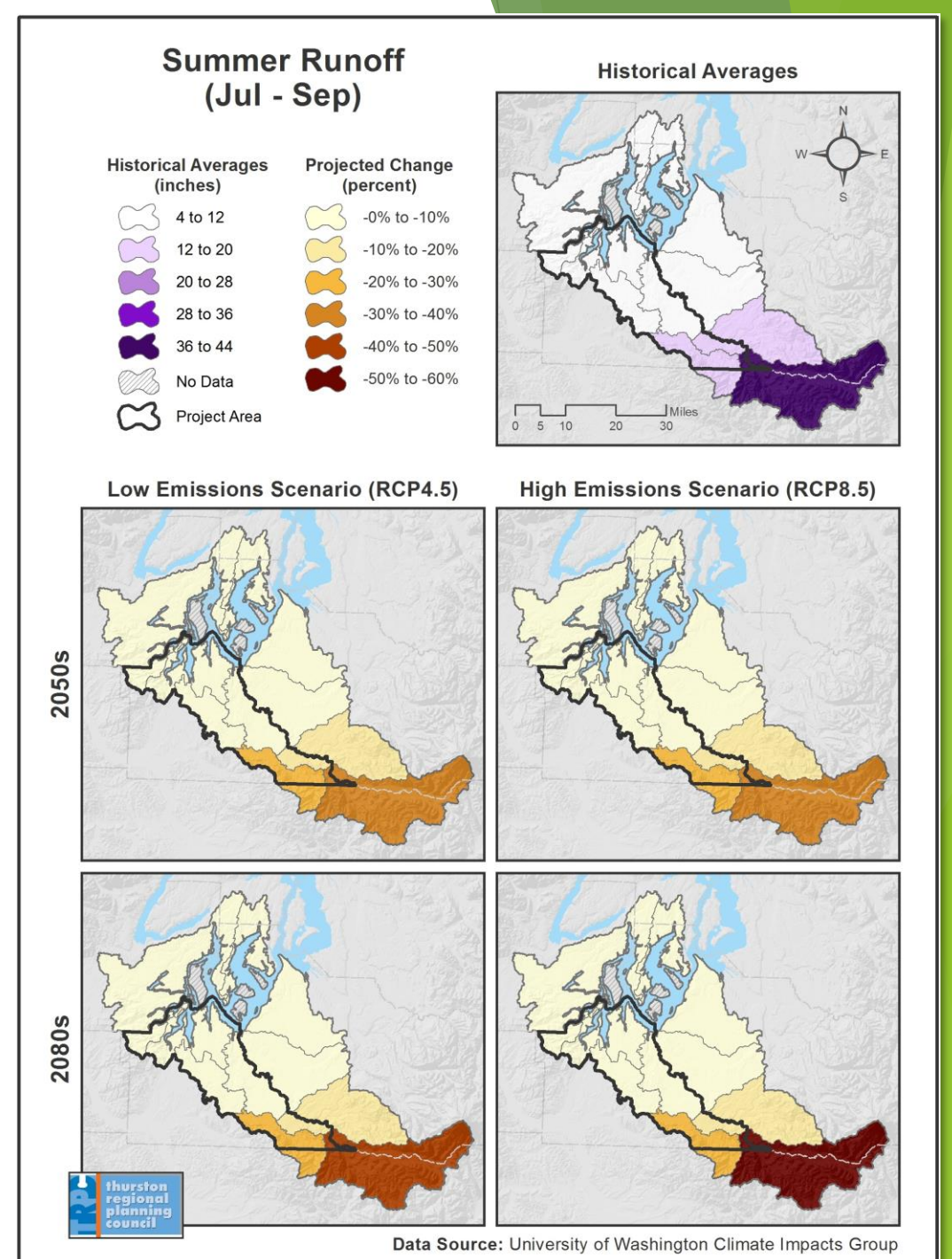
- It's necessary – even if we reduce our greenhouse gas emissions (mitigation)
- It's resiliency – the ability to weather large disturbances
- It's socially and fiscally responsible – potentially saves lives and dollars





Vulnerability Assessment

- ▶ Uses empirical data to show historical averages in region's climate over late 20th century
 - **Study Area:** South Puget Sound watersheds (Mount Rainier to the Puget Sound)
- ▶ Uses emissions scenarios and climate models to show projected changes over 21st century
 - **Indicators:** temperature, precipitation, runoff, snowpack, streamflow, sea level, etc.
- ▶ Assesses impacts on region's human and natural systems
 - **Assets Affected:** roads, estuaries, wells, crops, fisheries, forests, homes, health, etc.



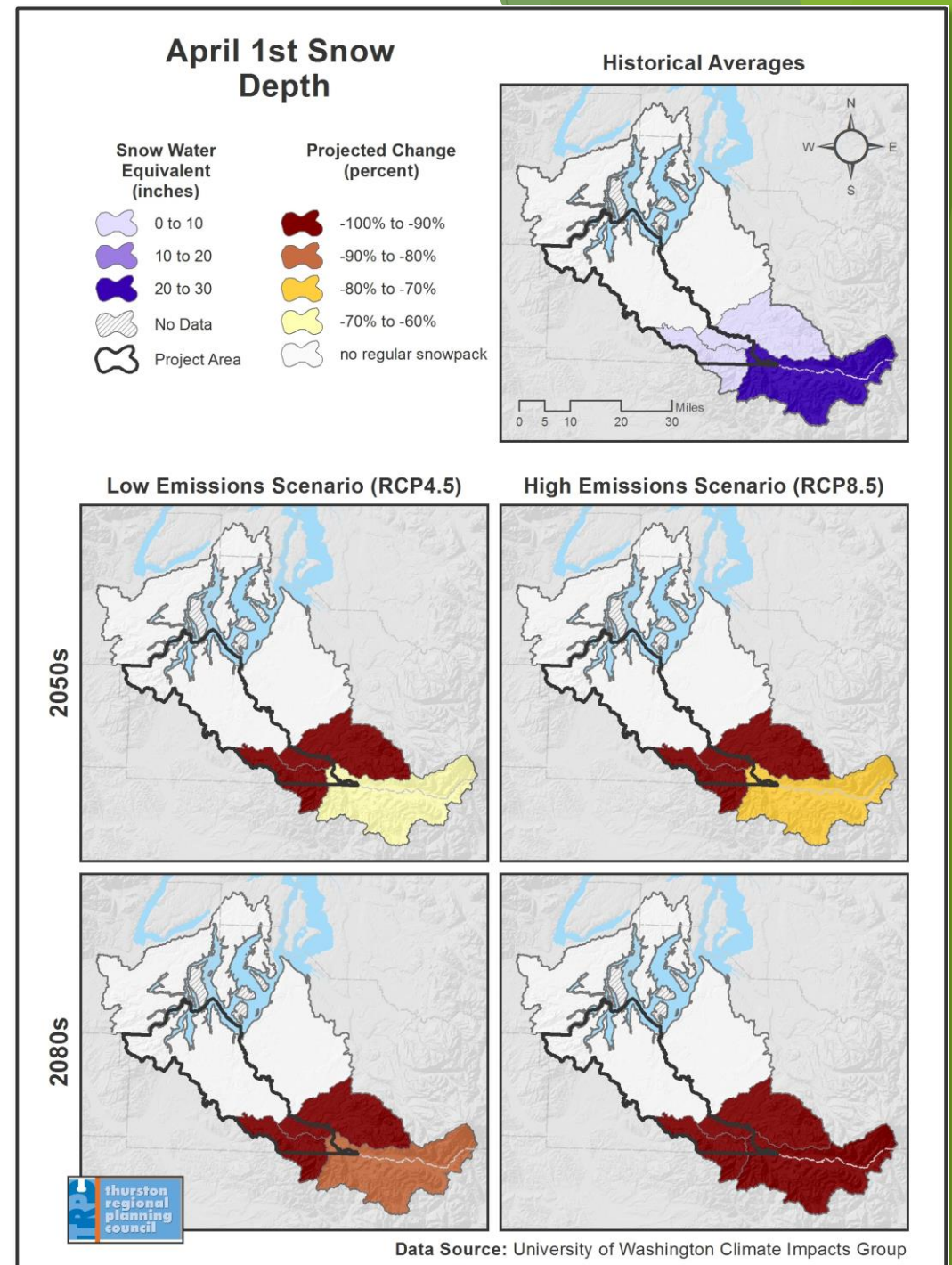


More on the Maps ...

Methodology:

- ▶ Uses map format and data from UW CIG's *State of Knowledge* report
- ▶ Models run “low” and “high” GHG emissions scenarios
- ▶ Watersheds split into smaller hydrologic units to show how change varies by elevation
 - ▶ (April 1 “Peak Snowpack” shown right)

Link: www.trpc.org/climate



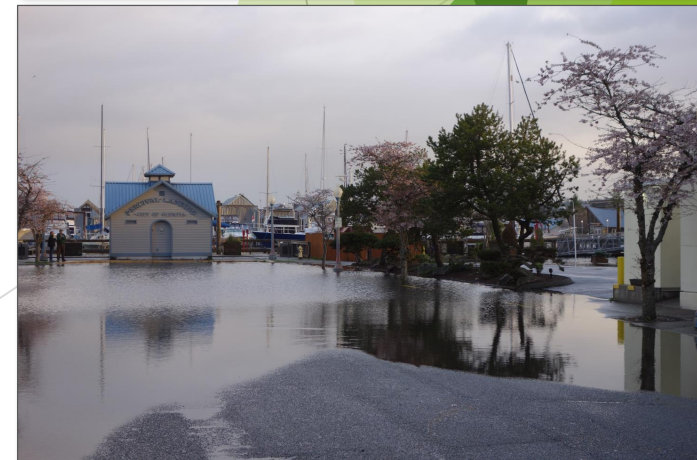
Climate Impacts

▶ Outlook:

- ▶ Region's average annual air temperature continues to rise over 21st century
 - ▶ Generally, **warmer, wetter winters** and **hotter, drier summers**
- ▶ Changes **worsen existing hazards** (floods, landslides, wildfires) and **introduce threats** (invasive plants and insects, infectious diseases).

▶ Risks & Impacts:

- ▶ Shrinking snowpack = Changes runoff timing and streamflow volume
- ▶ Changing oceans = Threatens local fisheries (acidification and temp.)
- ▶ Rising sea levels = Exacerbates coastal flooding and erosion
- ▶ Warmer waters = Threatens water quality for humans, salmon, etc.
- ▶ Bigger storms = Damages infrastructure, endangers people
- ▶ Deeper droughts = Spurs water shortages, wildfires, crop losses





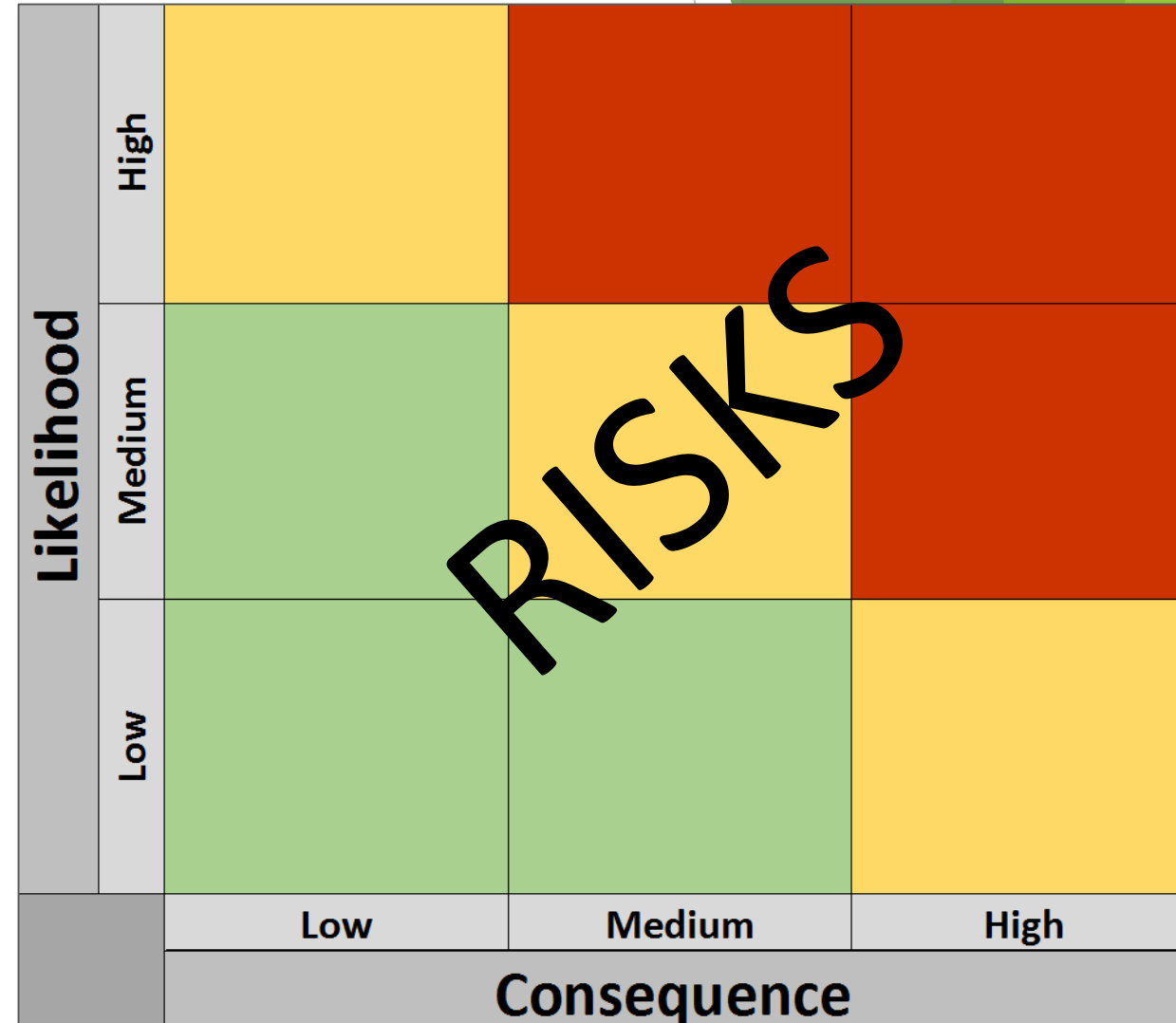
Risk Assessment

► Analyzed Risks:

- Put 80+ risks into a Consequence/Likelihood Matrix
- Assessed impact of each risk (*High, Med., or Low*)
 - Likelihood – probability of impacts
 - Consequence – severity of impacts

► Selected Strategies:

- Either Accept Risk or Take Action ...
- Accept Risk means:
 - Monitoring the risk
 - Considering actions if impacts begin to occur
- Take Action means:
 - Continuing or enhancing effective actions
 - Recommending new actions



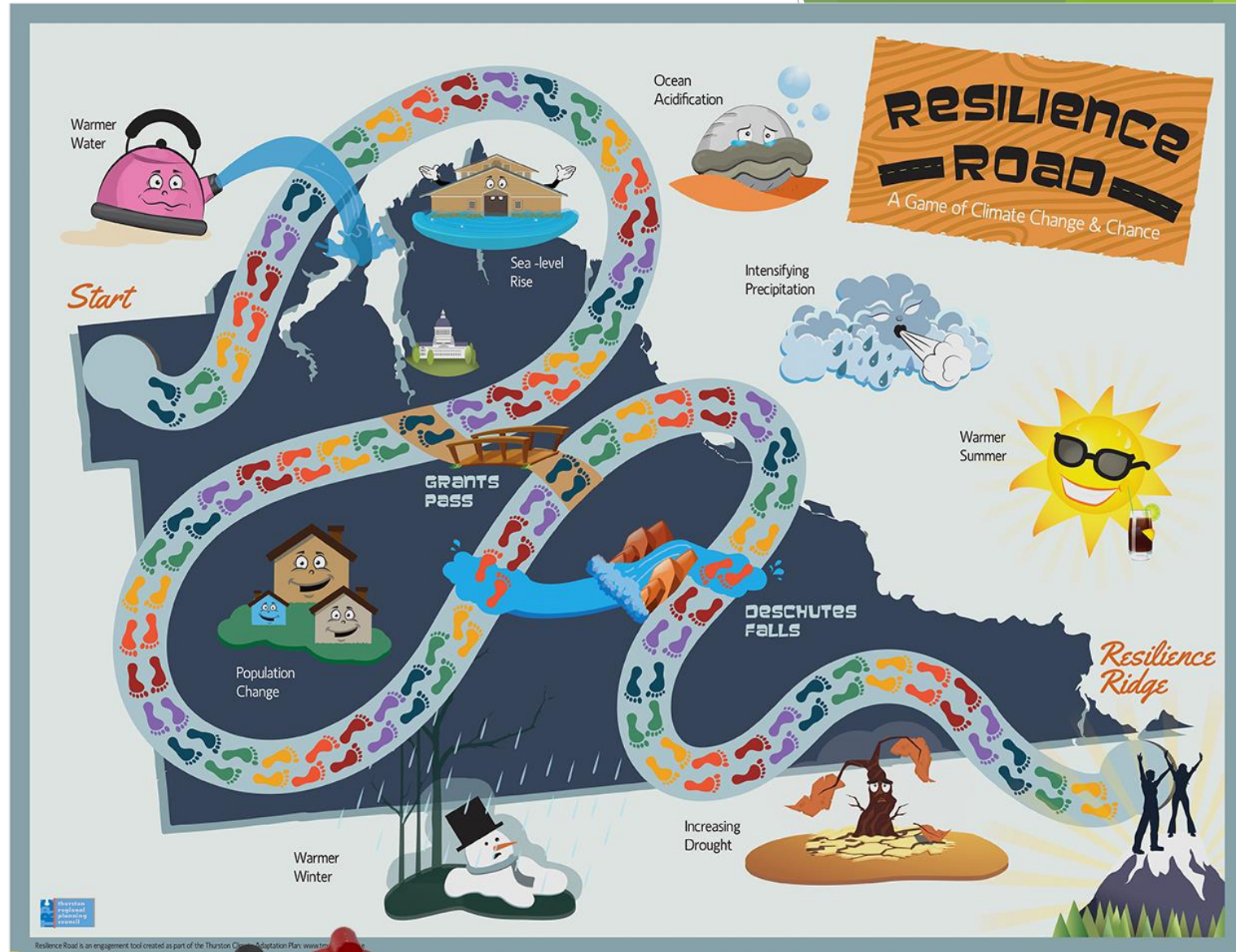
A Risk Assessment Matrix (RAM) showing the relationship between Likelihood and Consequence. The matrix is a 3x3 grid. The vertical axis is labeled 'Likelihood' with categories 'High', 'Medium', and 'Low'. The horizontal axis is labeled 'Consequence' with categories 'Low', 'Medium', and 'High'. The cells are colored as follows: High/Low is yellow; High/Medium and High/High are red; Medium/Low is green; Medium/Medium is yellow; Medium/High is red; Low/Low is green; Low/Medium is green; Low/High is yellow. A large, diagonal watermark reading 'RISKS' is overlaid on the matrix.

Likelihood		Consequence		
		Low	Medium	High
Likelihood	High	Yellow	Red	Red
	Medium	Green	Yellow	Red
	Low	Green	Green	Yellow

Public Engagement

► Multimedia Tools:

- Meetings with 20+ groups
- Newspaper editorial
- E-mail messages
- Social media posts
- Online video and surveys
- Community forums
- Board game (*right*)





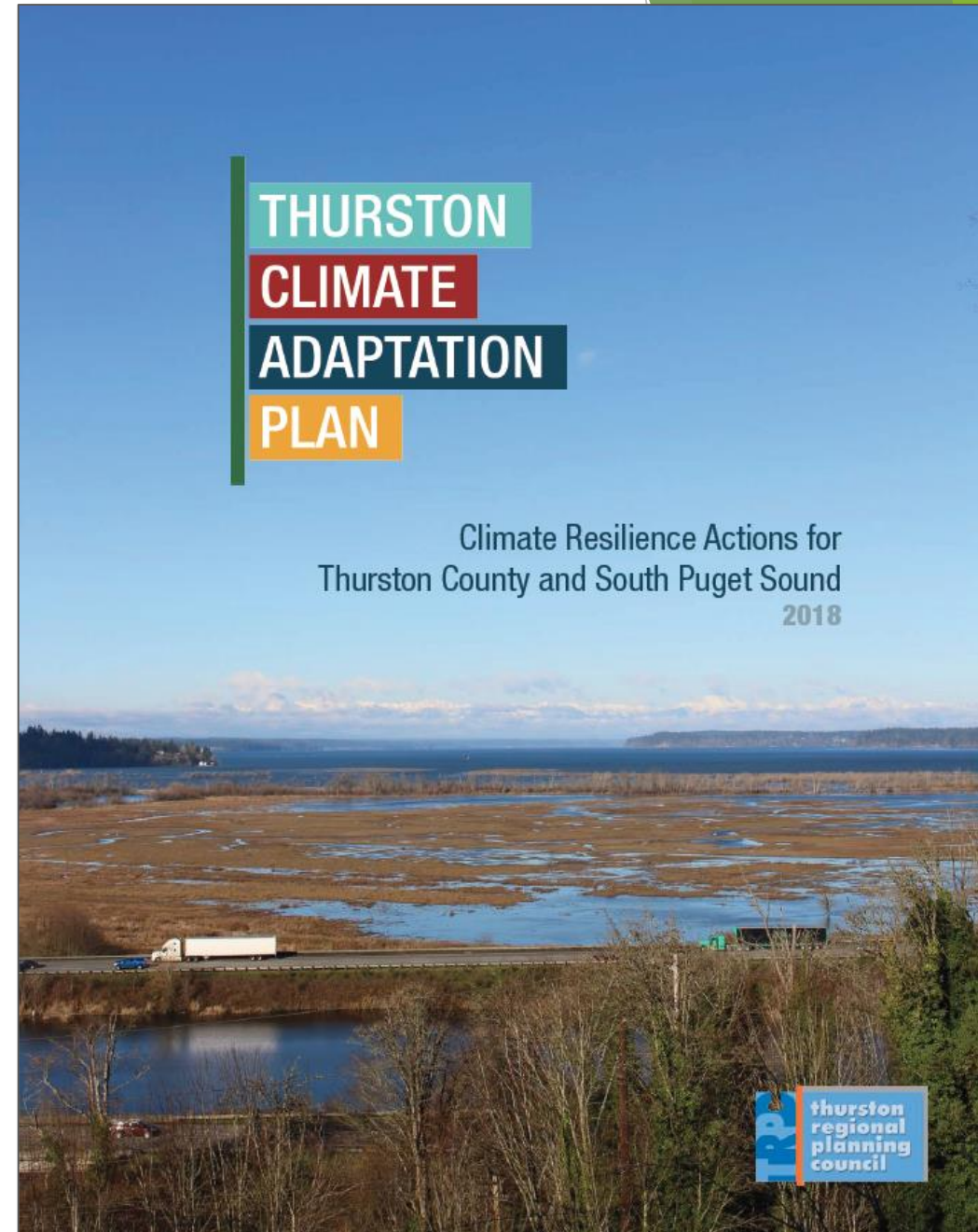
Taking the Show on the Road

- ▶ Hosted “Art of Change” event during arts festival (*top right*)
 - ▶ Pop-up library with climate books, plankton acidification mural, draft plan
- ▶ Presented “Resilience Road” board game and poster at Northwest Climate Conference in Seattle (*bottom left*)
- ▶ Presented project and facilitated interactive game at Sustainability in Prisons Project climate symposium (*bottom right*)



Adopted Plan

- ▶ www.trpc.org/climate
- ▶ Recommends **91** “adaptation” actions to prepare for and respond to impacts:
- ▶ Actions across **6** themes:
 - ▶ General
 - ▶ Drought & Water Quality
 - ▶ Flood & Erosion
 - ▶ Plants & Animals
 - ▶ Transportation & Energy
 - ▶ Wildfire & Extreme Heat



Plan Actions

- ▶ Selected **25 priority actions** based on risk assessment
- ▶ Identified a lead, partners, and timeframe

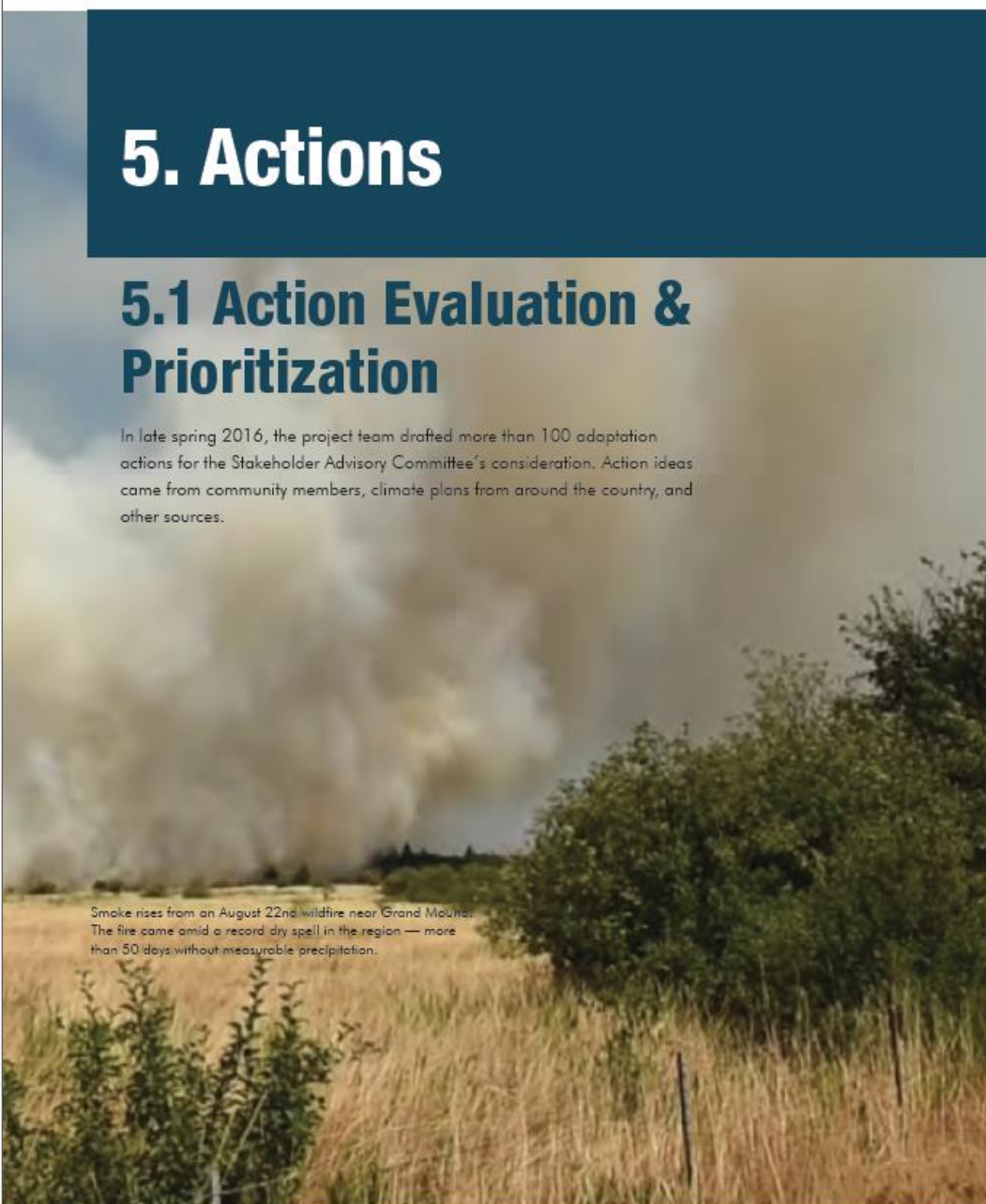
▶ Examples:

- ▶ **Action D-03**: Increase reuse of reclaimed water for irrigating plants, supplementing low streamflow, and other purposes.
- ▶ **Action F-03**: Design new and replacement stream culverts and other drainage infrastructure to accommodate projected higher peak flows associated with more frequent heavy precipitation events.
- ▶ **Action W-02**: Require new developments in high-risk wildfire areas to submit a fire-protection plan during site plan review.

5. Actions

5.1 Action Evaluation & Prioritization

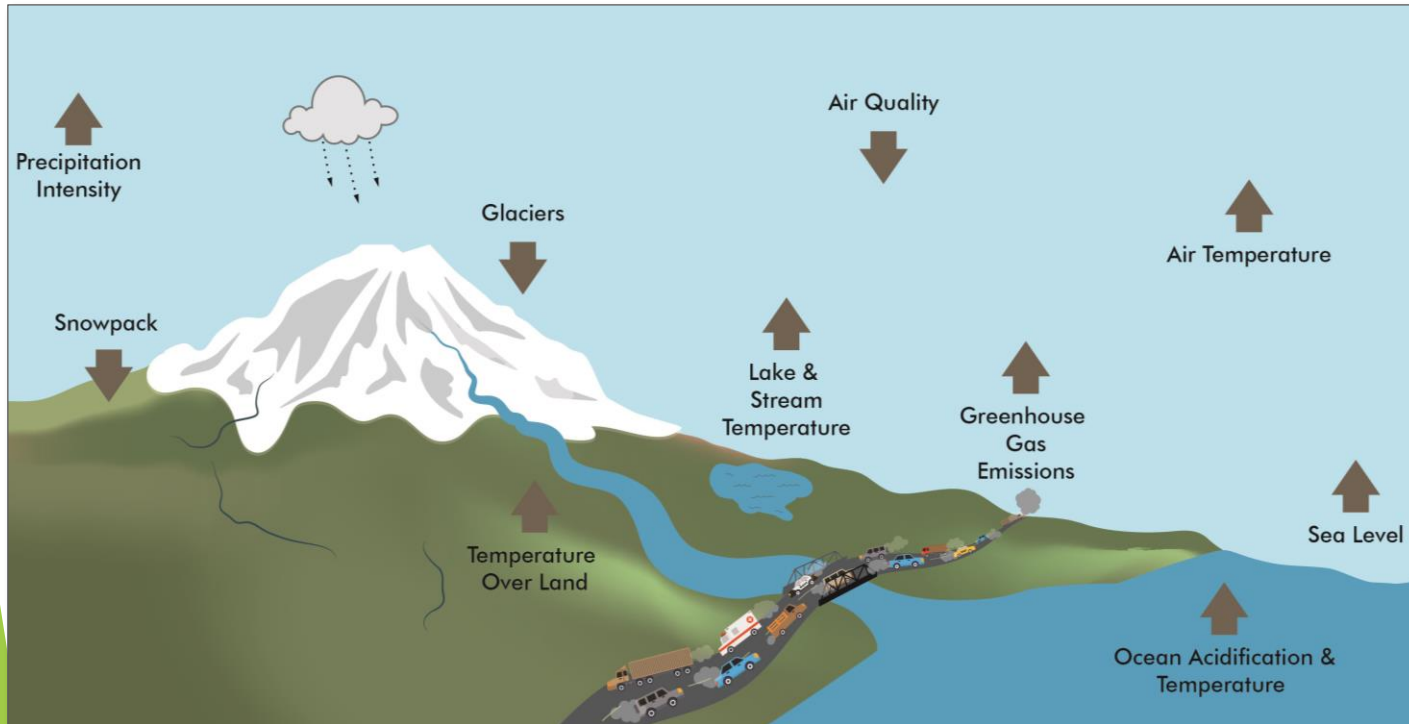
In late spring 2016, the project team drafted more than 100 adaptation actions for the Stakeholder Advisory Committee's consideration. Action ideas came from community members, climate plans from around the country, and other sources.



Smoke rises from an August 22nd wildfire near Grand Maule. The fire came amid a record dry spell in the region — more than 50 days without measurable precipitation.

Plan Design

- ▶ Enhances text with maps, photos, and graphics
- ▶ Explains complex information simply
- ▶ Connects science to policy clearly
- ▶ Includes technical information in appendices



Freshwater Ecosystems

Streamflow: A shift to more rain-dominant conditions across Thurston County watersheds is projected to result in higher runoff and streamflow during cooler months but the opposite during warmer months.

Within the Nisqually and Deschutes watersheds, the higher-elevation headwater areas are projected to experience the biggest changes in snowpack and runoff [See Figure 07], which affect streamflow timing and volume. Fish and other species that have evolved around predictable peak flows would be vulnerable to die-offs and degraded habitat.

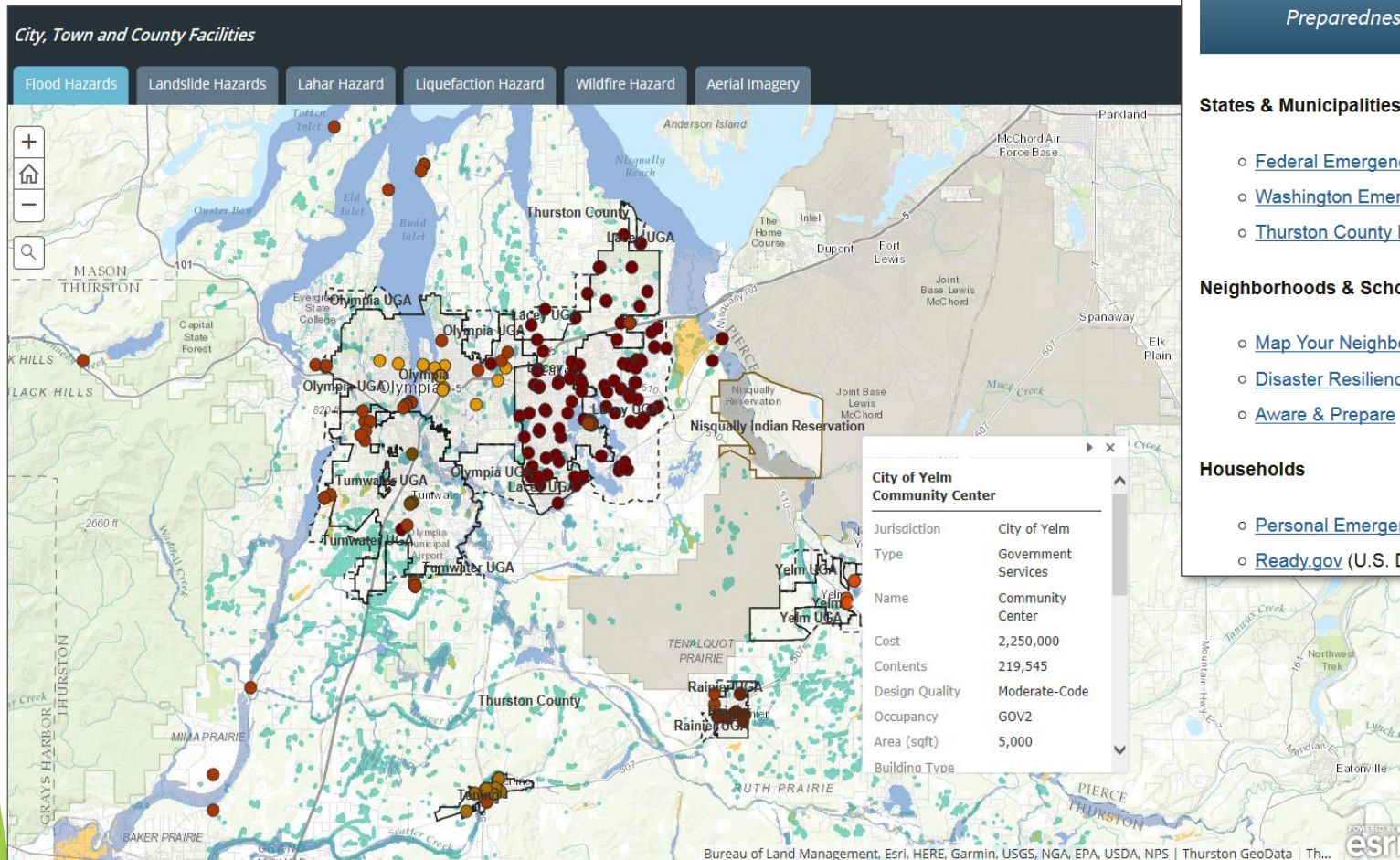
The Deschutes River overtops its banks at Tumwater Falls Park after a record-breaking storm in December 2015. Source: TRPC



Plan Resources

► Created **Resilience Toolkit** with links to TRPC’s Hazards Vulnerability map, climate data, preparedness resources:

► www.trpc.org/resiliencetoolkit



Resilience Toolkit

The following literacy, preparedness, and planning and data resources were curated to enhance climate resilience in Thurston County and beyond.

Preparedness

Planning & Data

Maps

Literacy

States & Municipalities

- [Federal Emergency Management Agency \(FEMA\)](#)
- [Washington Emergency Information & Resources \(State\)](#)
- [Thurston County Emergency Management \(Thurston County\)](#)

Neighborhoods & Schools

- [Map Your Neighborhood \(Thurston County\)](#)
- [Disaster Resilience Program for Schools \(Thurston County\)](#)
- [Aware & Prepare \(Santa Barbara County, Calif.\)](#)

Households

- [Personal Emergency Preparedness \(Thurston County\)](#)
- [Ready.gov \(U.S. Department of Homeland Security\)](#)



Implementation

► What's Next:

- City and Port of Olympia integrating actions into a sea-level rise response strategy for downtown
- Thurston County & Squaxin Tribe integrating actions into their comprehensive plans
- TRPC and partners beginning work on a companion climate mitigation plan **(85% x 2050)**





The End



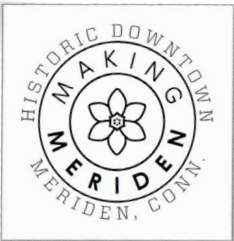
Project Website:
www.trpc.org/climate

Contact Information:
Michael Burnham
burnhamm@trpc.org



MERIDEN 2020: A COMPREHENSIVE PLAN FOR DOWNTOWN MERIDEN

APA Sustainable Communities Division
2018 Award for Excellence in Sustainability
Sustainable Urban Design Plan





Right Time, Right Place -

MERIDEN'S UNIQUE LOCATION AND OPPORTUNE TIMING OF INVESTMENTS

Since its industrial heyday in the 19th Century, there has never been a more exciting time to live and work in Meriden. In the past decade, the City has seen an unprecedented amount of private, local, state, and federal investment in its downtown. From flood control, to a new train station, to new development throughout downtown, the City of Meriden and its partners are actively engaged in numerous efforts designed to transform downtown:

- Secured \$16M to implement the HUB park and flood control project. Completed 90% of construction activities as of November 2015.
- Procured private developers to redevelop four City-owned sites totaling approximately 15 acres within the TOD District (116 Cook Ave., 104 Butler St. and 77 Cooper St., 11 Crown St., and portions of the HUB site).
- Approved 2016 Capital Improvement Plan including flood control projects.
- Adopted TOD District zoning regulations.
- Coordinated local planning efforts with the \$467 million New Haven-Hartford-Springfield commuter rail project.
- Partnered with a private developer recently awarded 9% tax credit financing through CHFA to construct a 63-unit, 11,000 square foot commercial use TOD at 24 Colony and a 273-space parking structure.
- Completed 35% traffic engineering design plans for the TOD District.
- Connecticut Department of Transportation (CTDOT) acquired Meriden Intermodal Transit Center.
- CTDOT completed demolition of 88 State Street for commuter parking.
- Reconstructed West Main Street sidewalks from Cook Avenue to South Grove Street.
- Completed TOD master plan, market and financial analysis and updated downtown parking study.



Secured \$16M to implement the HUB park and flood control project. Completed 90% of construction activities as of November 2015.



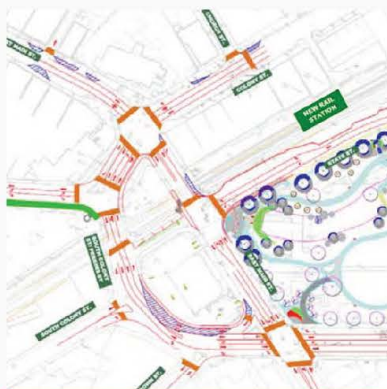
Procured private developers to redevelop four City-owned sites.



Partnered with a private developer recently awarded 9% tax credit financing through CHFA to construct a 63-unit, 11,000 sf commercial use TOD with a parking structure at 24 Colony.



Coordinated local planning efforts with the \$467M New Haven-Hartford-Springfield commuter rail project.



Completed 35% of traffic engineering for complete streets design plan for the TOD District.



Reconstructed West Main Street sidewalks from Cook Avenue to South Grove Street.

Photo Credit: John Phelan



CTDOT completed demolition of 88 State Street for commuter parking.



CTDOT acquired Meriden Intermodal Transit Center.



Approved 2016 Capital Improvement Plan including flood control projects.



- 25 Butler Street Pay Parking Lot/YMCA
- 44 Hanover Street - Free Parking Lot
- 53 Colony Street - Gallery 53
- 145 Colony Street - CTown, WFC
- 161 State Street - Free Parking Lot, MHA
- CT Transit - State Street at Brooks Street
- 43 West Main Street - MxCC & Church Street Pay Parking Garage

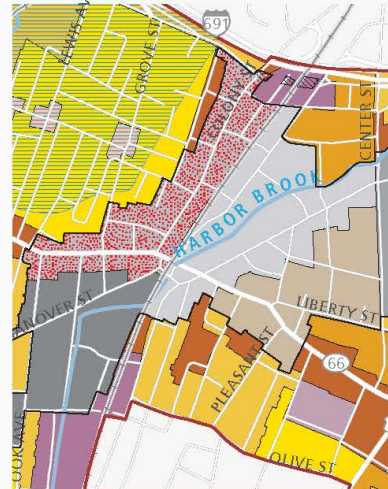
Updated downtown parking study and implemented pilot downtown shuttle loop.



Approved demolition disposition of two Mills low-rise buildings and environmental work on Mills block. This will include site remediation and removal of hazardous building materials where necessary to ensure that new development is free of environmental hazards.



MPSD - Meriden Public School District as a planning and implementation partner.



Approved TOD District zoning regulations.



C-Town Supermarket opened in 2014.



Meriden Children First - Meriden Promise Neighborhood Award.







INFILL

HUB (STATE ST)

MILLS (STATE ST)

24 COLONY

143 W. MAIN

MILLS (CEDAR ST)

HUB (PRATT ST)

RECORD JOURNAL BUILDING

116 COOK







Taking Action Towards Healthier and Liveable Communities



Dr. Cris B. Liban, P.E.
Fellow, American Society of Civil Engineers

Our Challenges

- We are in the midst of the largest build-out in LA history
- Subject to the most stringent regulatory requirements
- Our projects go through the most vulnerable areas
- Technology is rapidly evolving
- Aspirations to optimize environmental benefits
- Resources are scarce



LA Metro is Los Angeles County's...



Regional Transit Planner/Funder



Regional Transit System Builder



Regional Transit Operator





ECSD Evolution

2003

- Soil and hazardous materials hauling
- Asbestos removal
- Environmental clearance support
- Real estate support
- Construction environmental compliance
- Environmental Compliance and Services Department

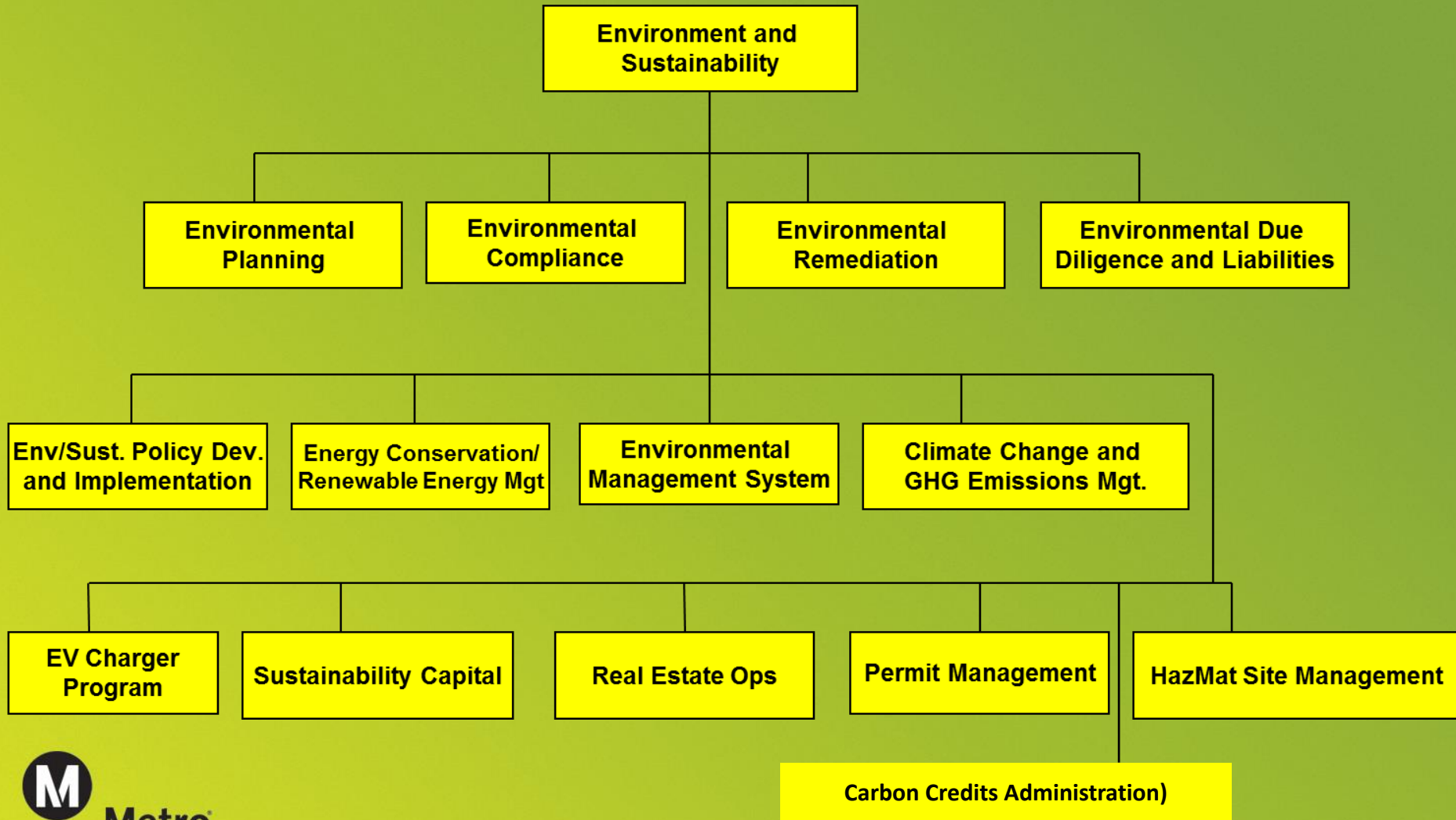
2018

- Full service and comprehensive network of services
- Internal and external facing
- In house expert for environmental, sustainability, and resiliency programs
- Environmental Compliance and *Sustainability* Department



Metro

An Integrated Approach





Green Infrastructure

- Methods/Materials/Structures
- Project Specific Sustainability Plan Commitments
- Emerging Ideas as Retrofits
- Green Buildings
- Green Strategies
 - Orange Line
 - Foothill Extension
 - Permeable Pavement
 - TemPark Pilot
- Operations/Maintenance
- LEED, Envision, and Others



Metro



Metro Transit Capital Program (Existing/Future)



Metro 40-Year Capital Program (Projected)

Metro Transit & Highway Projects: The 40-Year Plan



Current Capital Projects

IN THE WORKS

Transit, Highway and Capital Acquisitions Costs

TOTAL COST
\$14B

Metro Transit Projects

				
\$851M	\$1.5B	\$1.4B	\$2.8B	\$2B
Gold Line Foothill Extension Metro Share: \$851 million	Exposition Line Phase 2 Metro Share: \$1.5 billion	Regional Connector Metro Share: \$750 million	Purple Line Extension Segment 1 Metro Share: \$1.6 billion	Crenshaw/LAX Transit Project Metro Share: \$1.9 billion

= \$8.5B

Metro in Cooperation with Caltrans

			
\$3.3B	\$430M	\$460M	\$160M
I-5 (all projects under construction) Metro Share: \$1.5 billion	I-10 (all projects under construction) Metro Share: \$250 million	SR-138 (all projects under construction) Metro Share: \$265 million	I-710 (all projects under construction) Metro Share: \$160 million

= \$4.3B

Metro Major Initiatives Capital Acquisitions

			
\$308M	\$739M	\$46M	\$120M
Bus Purchases Metro Share: \$80 million	Rail Purchases Metro Share: \$468 million	Blue Line Enhancements Metro Share: \$46 million	Division 13 Metro Share: \$14.3 million

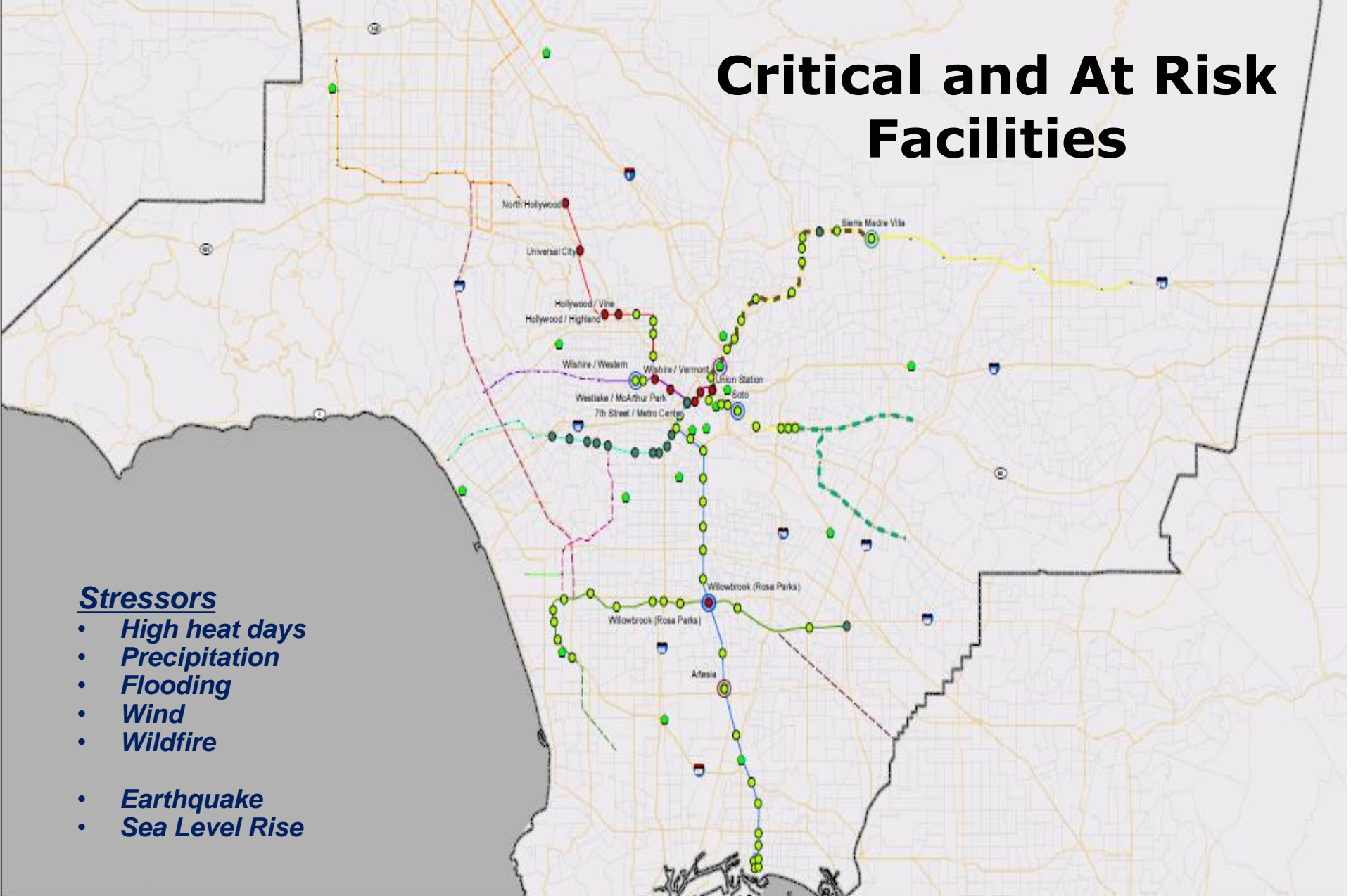
= \$1.2B

Critical and At Risk Facilities

Stressors

- High heat days
- Precipitation
- Flooding
- Wind
- Wildfire

- Earthquake
- Sea Level Rise



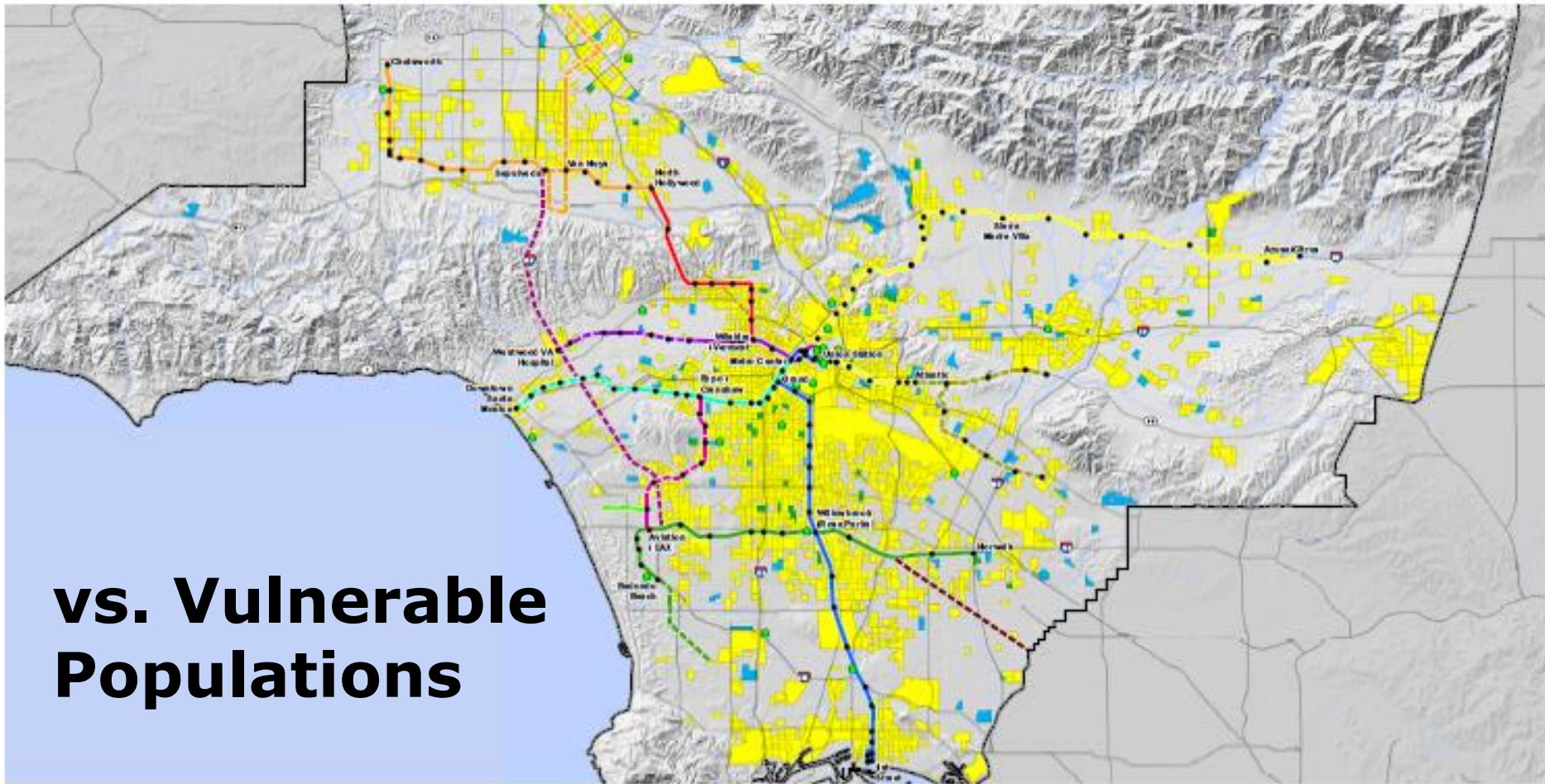
Metro Rail and stations	Under Construction/Future Lines and stations	Maintenance Facility
Red Line	Expo Line Phase 2	Maintenance Facility
Purple Line	Gold Line Foothill Extension	
Blue Line	Crenshaw Line	
Orange Line (BRT)	Westside Extension	
Bus	Green Line Extension	
	Green Line Extension to LAX	
	West Santa Ana Transit Corridor	
	Sepulveda Pass Transit Corridor	
	Orange Line Extension	
	Eastside Transit Corridor Phase 2	
	Regional Connector Transit Corridor	

Stations	Stations at Risk*	Rail Lines at Risk*
Critical	Temperature	Temperature
Not Critical	Winds	Winds
Unknown	Flooding	
	Storms	

*Assets identified as historically vulnerable by LA Metro staff



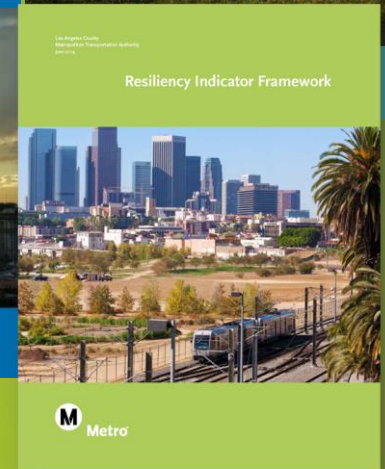
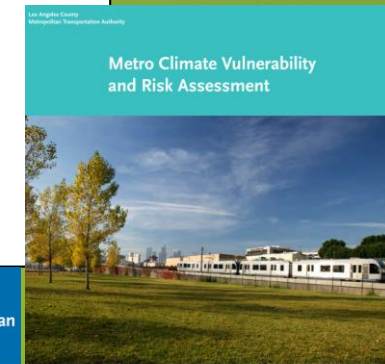
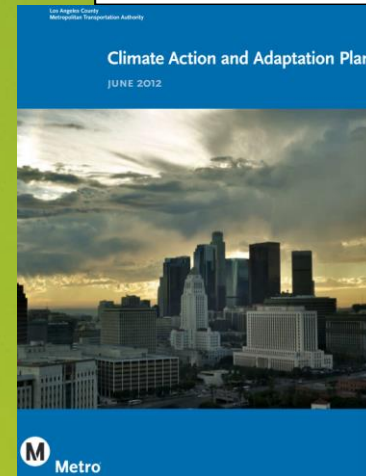
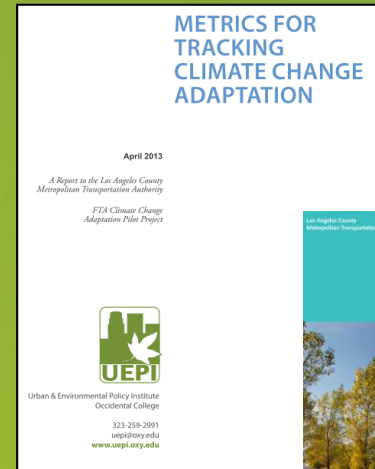
vs. Vulnerable Populations



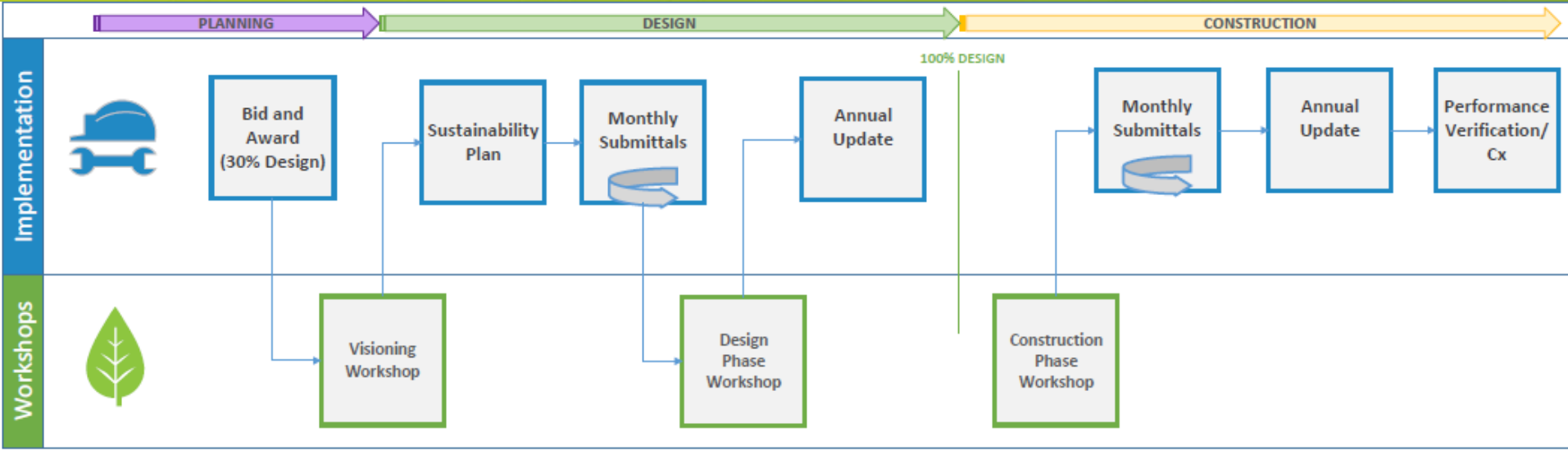
Source: Los Angeles County; Los Angeles Metropolitan Transportation Authority 2013, AECOM 2013.

Towards a Sustainable Infrastructure

- Constructing on vulnerable populations data
- Adapting to evolving extreme weather event stressors
- Bus Stops and Rail Stations
- Technology
- Collaboration with Universities
- Strategies to become a more resilient system
 - Internal and External

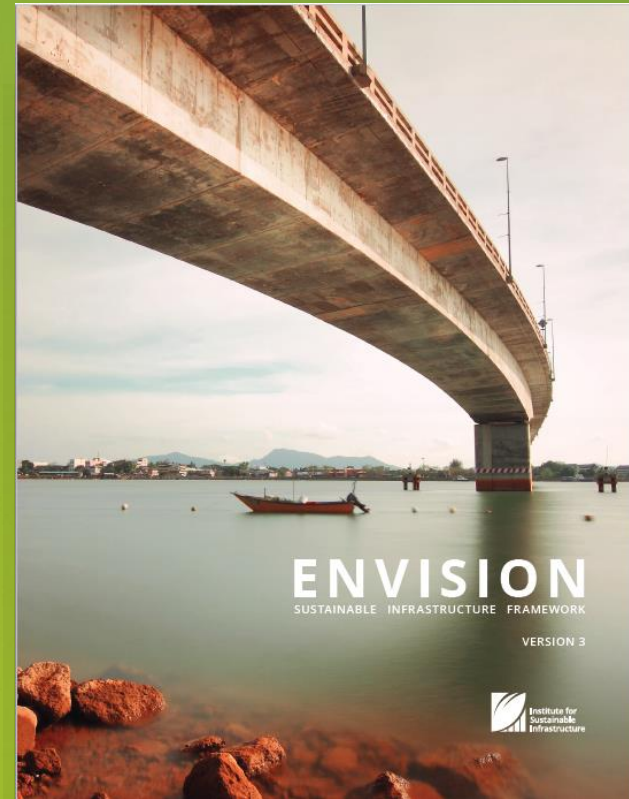


Sustainability Plan Process Map



How Does Envision Work?

- Go to www.sustainableinfrastructure.org to download Envision Checklist at no cost
- Learn to use Envision better with the Envision Sustainability Professional (ENV SP) training
- Use Envision to guide planning, design, and construction projects to reduce environmental footprint and support the larger goal of improved quality of life
- Evaluate and recognize infrastructure projects that use transformational, collaborative approaches to incorporate sustainability throughout a project's life

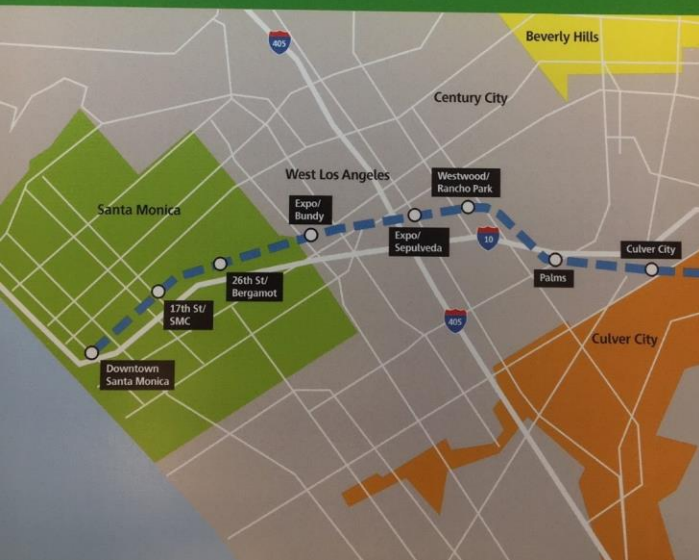


Adapted from ISI website and other sources, 2018. Does not count as an ISI training

Expo Phase 2

SKANSKA

Metro Expo Line Phase 2



26th St/Bergamot

The Bergamot Art District is a true hub for creativity that has gained a lot from the exposure of being in close proximity to the rail line.

RA2.3

Commission and Monitor Energy Systems

Metro has established an extensive training program for all operation and maintenance personnel to ensure all systems continue to operate at their intended efficiency throughout the life of the project.



Expo/Bundy

The porous pavement being used around Expo/Bundy acts like a natural on-site storm water retention system, reducing the storm water runoff.

RA3.1

Protect Fresh Water Availability

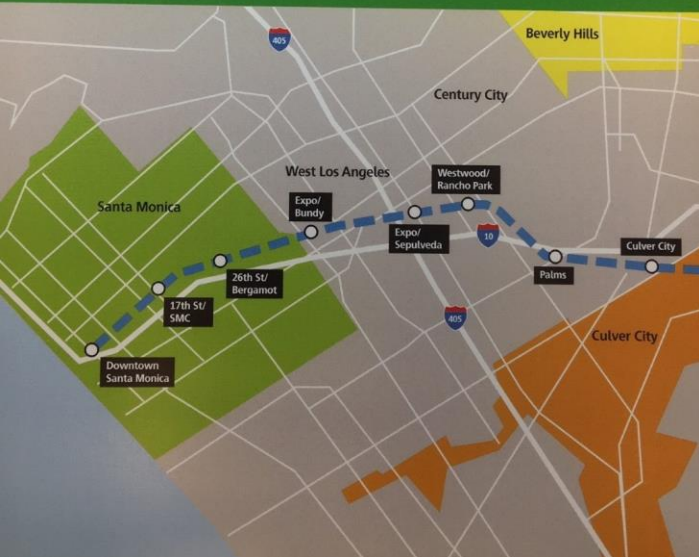
The irrigation of the plants is made via water efficient sprinklers, using 30-50% less water than traditional sprinklers. All city of Santa Monica irrigation is grey water derived from the Santa Monica Urban Recycled Runoff Facility (SMURRF).

Skanska, 2016, credits were based on old Envision Rating System in place at the time

Expo Phase 2

SKANSKA

Metro Expo Line Phase 2



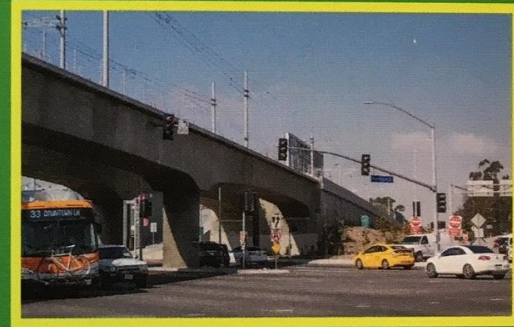
Palms

Two bridges were restored that served the original Pacific Electric Line: one over National and another over Motor.

LD1.4

Provide for Stakeholder Involvement

LA Metro's public art program funded original artwork at each station. A peer review process to select the art involved the community and stakeholder input.



Culver City

Culver City is the project's point of departure. It was the existing terminal of the first phase of the Expo Line.

QL1.1

Community Quality of Life

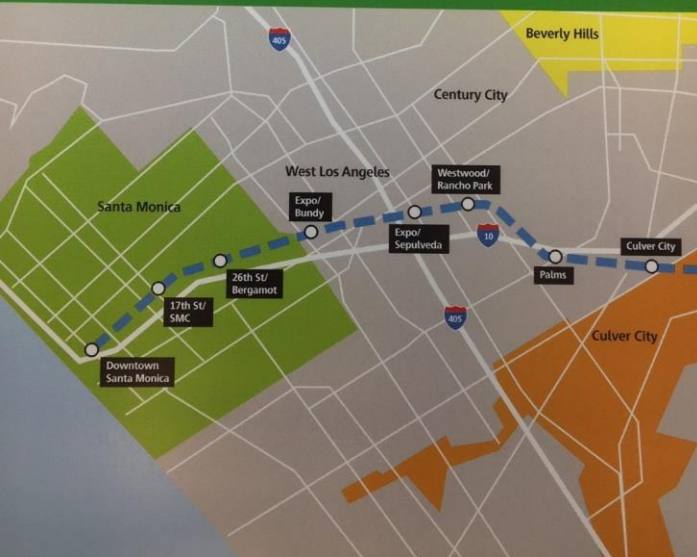
The station's canopy roofs were designed to give shade and the LED fixtures provide excellent lighting on platforms without creating light pollution at night time.

Skanska, 2016, credits were based on old Envision Rating System in place at the time

Expo Phase 2

SKANSKA

Metro Expo Line Phase 2



Expo/Sepulveda

There was a lot of contaminated soil around Expo/Sepulveda. It has been removed and replaced by the rail line and native plants.

QL2.2

Minimize Noise and Vibration

A special Gerb track was used throughout the rail line to prevent the sound level being too high. It lowers the decibel level that light rail vehicles emit.



Westwood/Rancho Park

The Sarah Berman Greenway is located next to this station.

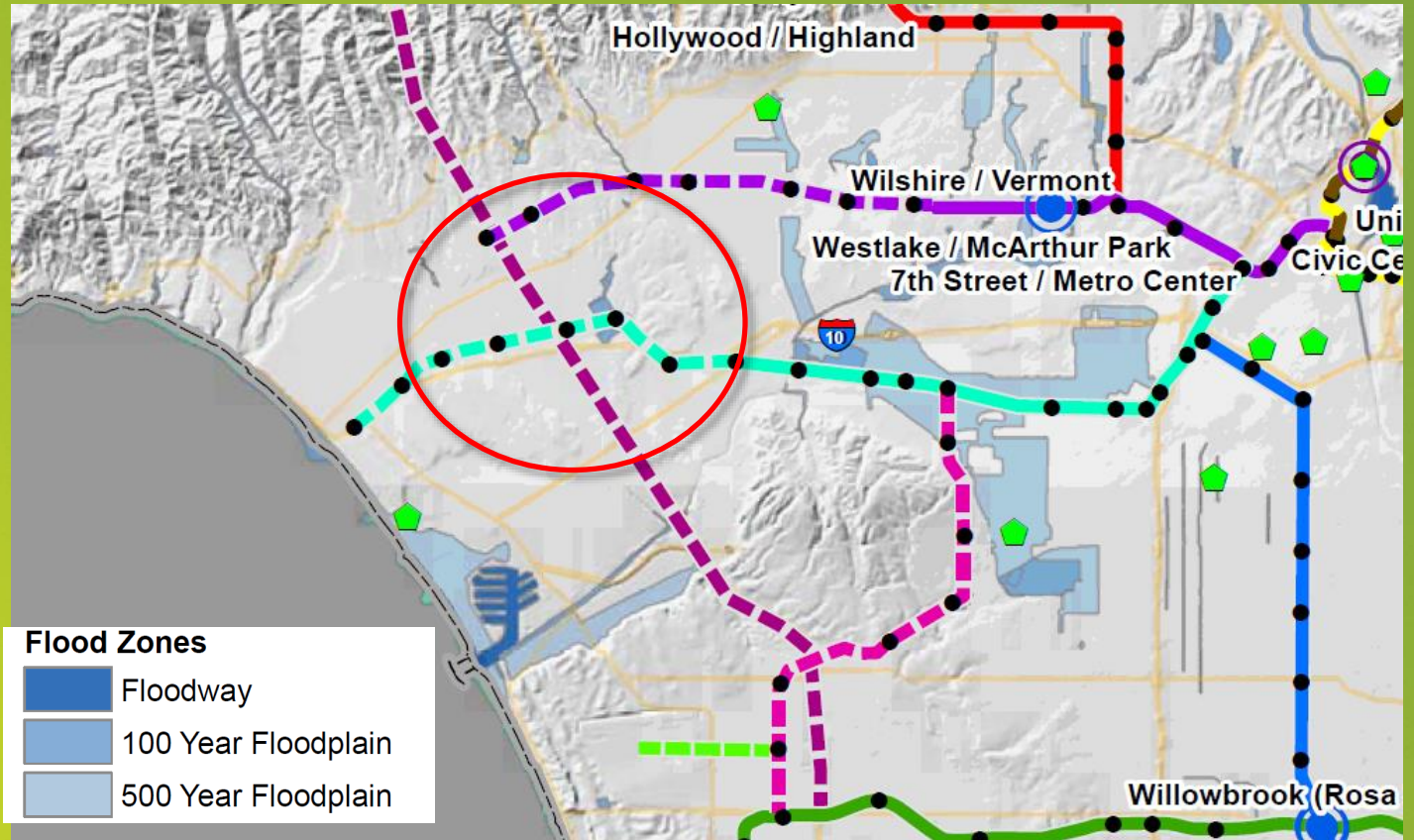
NW3.1

Preserve Biodiversity

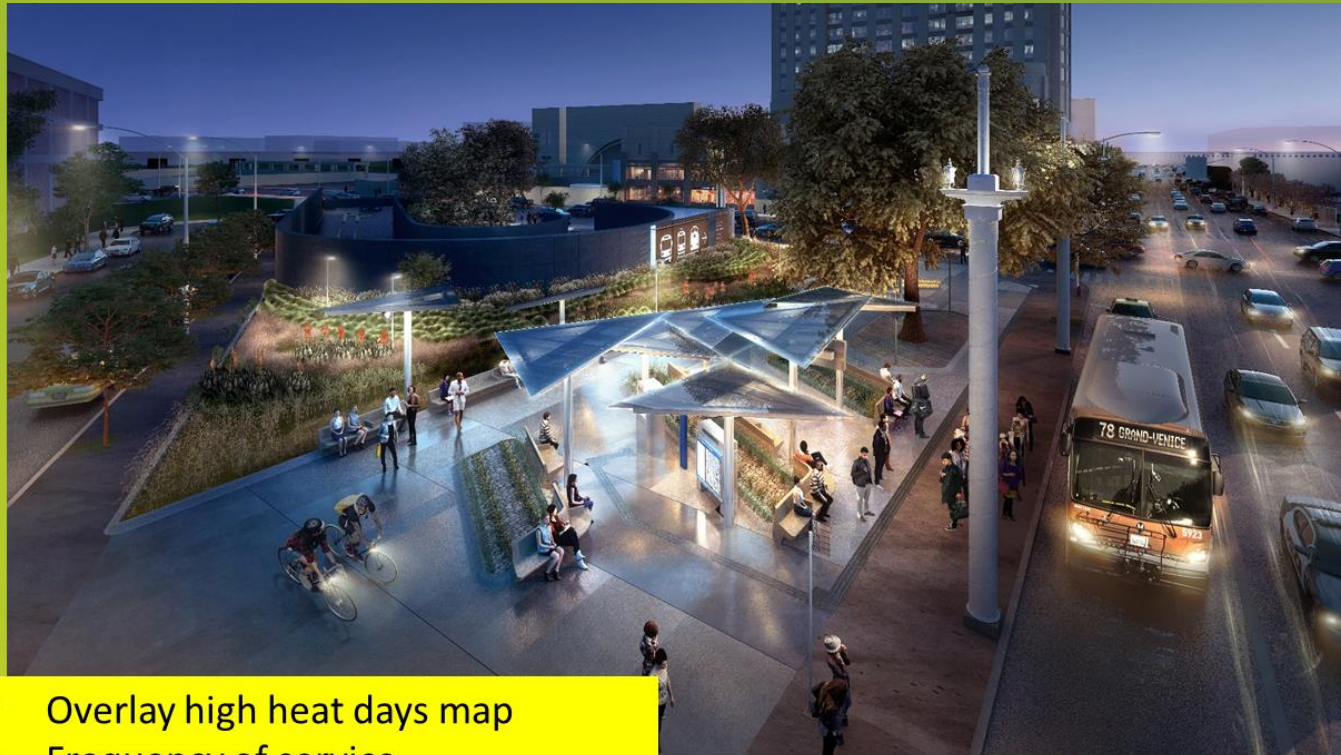
Expo 2's landscaping consists of 90% native plant species. The plants are climate-adapted and drought-tolerant, requiring little watering. They help to preserve the original biodiversity of this area.

Skanska, 2016, credits were based on old Envision Rating System in place at the time

Expo Rancho Park Station



Cesar Chavez Avenue Bus Stop



- Overlay high heat days map
- Frequency of service
- What's most important for patrons

We Are Reducing Harmful Emissions During Construction

UPB – Universal Pedestrian Bridge

Reduction in CO₂e (carbon dioxide equivalent) based on using Tier 4 equipment rather than Tier 2 equipment.

Equivalent of Passenger Vehicle Miles Reduced



Reduction in Passenger Vehicles Driven for One Year



Carbon Dioxide Equivalent Reduction
49%

PLE – Purple Line Extension Section 1

Reduction in CO₂e (carbon dioxide equivalent) based on using Tier 4 equipment rather than Tier 2 equipment.

Equivalent of Passenger Vehicle Miles Reduced



Reduction in Passenger Vehicles Driven for One Year



Carbon Dioxide Equivalent Reduction
66%

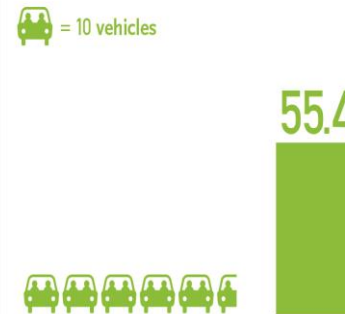
RC – Regional Connector

Reduction in CO₂e (carbon dioxide equivalent) based on using Tier 4 equipment rather than Tier 2 equipment.

Equivalent of Passenger Vehicle Miles Reduced



Reduction in Passenger Vehicles Driven for One Year



Carbon Dioxide Equivalent Reduction
64%

CLAX – Crenshaw/LAX

Reduction in CO₂e (carbon dioxide equivalent) based on using Tier 4 equipment rather than Tier 2 equipment.

Equivalent of Passenger Vehicle Miles Reduced



Reduction in Passenger Vehicles Driven for One Year



Carbon Dioxide Equivalent Reduction
63%



Materiality Benefits of Green Construction

Material Conservation and Resource Efficiency

CLAX – Crenshaw/LAX

Reused crushed concrete/asphalt as temporary base, rather than purchasing new crushed miscellaneous base material, resulting in cost savings.



Approximately 100% viable soil is being used as backfill for mechanically stabilizing earth (MSE) walls.

Refurbished viable wood 1,000 tons of wood ties.



Many tons of railroad ballasts recycled or re-used to stabilize soil during construction to reduce mud and dust.



Unviable, contaminated soil sent to landfill for proper disposal.

5 million pounds of unviable wood disposed as Treated Wood Waste.

Contaminated ballasts hauled to hazardous waste site.



Reuse Reduces...



Truck Loads, Traffic Disturbances, Dust Generation



Costs on New Materials and Wear and Tear on Equipment



Energy Use and Greenhouse Gas Emissions

Green Buildings

Division 9, El Monte

Bauchet Street, LA

- > LEED Requirements
- > Eight LEED-NC
- > Three LEED-EBOM
- > Future LEED: ESOC/Rosa Parks/US/D20
- > All green campuses by 2020

Division 13, Downtown LA

Metro Gateway HQ, LA

El Monte Bus Station, El Monte



Chatsworth

213 KW



Sun Valley

213 KW



Monrovia M/O Facility

~179 KW



El Monte Station

89 KW



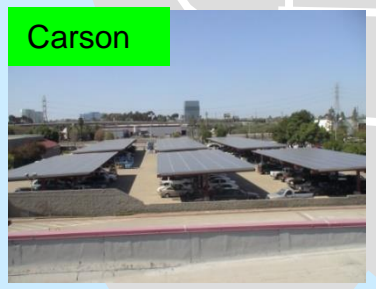
Downtown LA: CMF

1000 KW



Downtown LA: Div 13

~500 KW



Carson

417 KW

Los Angeles County

San Bernardino County

Solar Panel Installations and Energy Management Systems

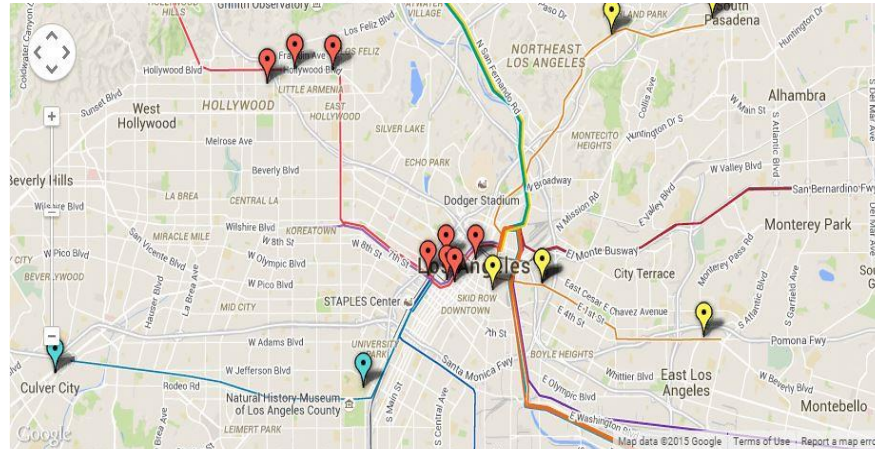
Next:
Other Renewables
Community Solar Installations
County Partnerships

Working with Our Communities/Stakeholders

- Fresh Food Access (www.metro.net/markets)
- Small Business/Community Engagements
- Cities/LA County Collaboration
- First/Last Mile Connectivity
- Alternative Financing
- Research Projects
- Emerging Issues/Challenges
 - Community Resiliency
 - Transportation Disruptors



Go Metro to Farmers' Markets



Discover fresh produce at markets near Metro Rail and Transitway stations. Click on the map or check the directions below for transit and walking directions.

South Los Angeles

- **Blue Line Farmers' Market in Compton***
- **Long Beach Downtown Farmers' Market***
- **The Watts Healthy Farmers' Market***

Eastside

- **Old LA Certified Farmers' Market**
- **Boyle Heights Farmers' Market**
- **Taste of Boyle Heights Farmers' Market**
- **The East LA Farmers' Market***
- **Arts District Farmers' Market**

Downtown LA

- **Pershing Square Farmers' Market**
- **FIGat7th Farmers' Market**

Next:
[Virtual Store](#)
[Urban Farms](#)
[Fresh Food Delivery](#)

Compton Station Farmers' Market



Serves residents of Compton and the surrounding neighborhoods

Accessible by 90,000 Metro Blue Line commuters



Alternative Fuel Buses

- About 2,200 CNG Buses
 - Largest in the Country
 - 100% of fleet
- Biomethane procurement
- Ultra low NOx CNG Engines + Biomethane



>90% in criteria air pollutants DECREASE since 1990

GHG Reduction (CNG/Biomethane Use vs. CNG/Fossil Natural Gas Use:

- **Agencywide: 45% Reduction**
- **Bus Fleet: 75% or more**

Alternative Fuel Buses

- ZEBs
 - Commitment for 2030
- Board Motions
 - Outline for a comprehensive plan to further reduce greenhouse gas emissions by gradually transitioning to a zero-emission bus fleet
 - Agencies and manufacturers that use and provide ZEVs, respectively



Working with Our Employees

- ISO 14001: Environmental Management System
- Environmental Training Institute: *NTI Model Award*
- Use of Analytics for Continual Improvement
- Safe/Environmentally Friendly Work Environments
- Bottoms Up & Top Bottom
- Funding as “Investments”





Gold Line Foothill Extension



Expo Phase 2

Enhancements

- More than 100 EV Chargers, up to 3,000 throughout County
- Car-Sharing
- Technology and Phone Apps
- Workplace Charging
- InterCity/County Partnerships

A Vision for EV Charger Expansion

Partnerships



ENGINEERING SUSTAINABILITY

Metro's is working with organizations like the American Society of Civil Engineers on Sustainable Infrastructure standards development, reinventing the engineering process, increasing capacity, and policy/advocacy.



GROWING A GREENER WORKFORCE

Over **480** Metro employees and community members had been trained and certified as sustainability professionals.



GREEN PROCUREMENT

Metro has began the process to re-invent how we are procuring for goods and services.



RESEARCH AND POLICY

Participating and initiating research projects with institutional partners around the world to inform and develop regional environmental and sustainability policies.



Metro

HIGHLIGHT ENVIRONMENTAL JUSTICE



- > Metro's alignments are located in areas disproportionately burdened by pollution
- > **Commitment to Environmental Justice** - Metro's 2009 Long Range Transportation Plan
- > **Environmental Justice in Practice:**
 - Community engagement during planning
 - Green Construction Policy

CASE STUDY: Crenshaw LAX

The reduction in emissions related to construction activity for CLAX was equivalent to removing over

15,000
cars from the road



CalEnviroScreen Map of LA and Metro's Transit Alignments



Metro improves
quality of life
for neighborhoods that need it



Metro

2018 Energy & Resource Report

HIGHLIGHT GREENER FLEET



By 2019, over

15%

of Metro's non-revenue sedan fleet will be BEVs

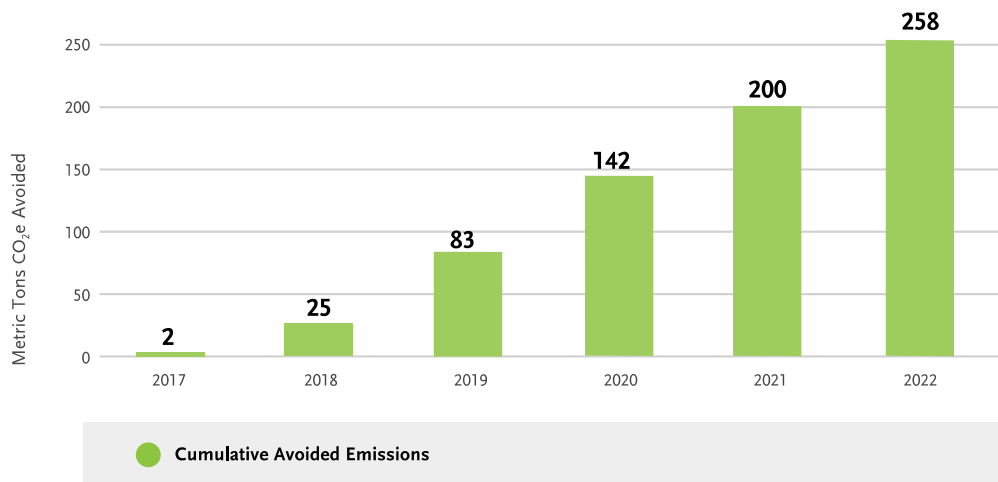
> Transition Non-Revenue Fleet to Battery Electric Vehicles (EV):

- 10 all-electric Chevy Bolts deployed by Non-Revenue in 2017
- 20 additional Chevy Bolts will be added in 2018-19

> Support Programs:

- EV charging stations
- BEV driver training program

Projected Cumulative Avoided GHG Emissions of Expanded BEV Fleet



HIGHLIGHT SUSTAINABILITY COUNCIL



Mission:

To advise Metro regarding its sustainability-related activities and projects; continually improve sustainability efforts by developing targets, metrics, and strategies; and serve as a successful proof of concept for cities it serves in achieving stated sustainability program goals.

26 voting members
representing a
range of sectors and stakeholders



Subcommittees:

Resource Management

Electrification

Partnerships

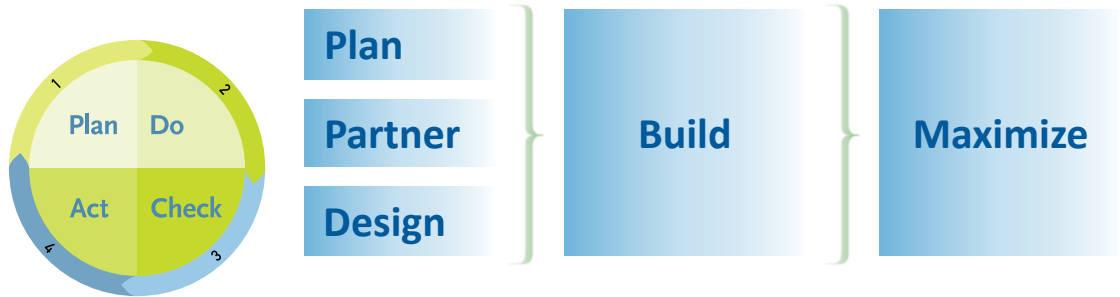
Metro 27



HIGHLIGHT LIFE OF A SUSTAINABLE PROJECT



Metro considers sustainability at all stages of a project:

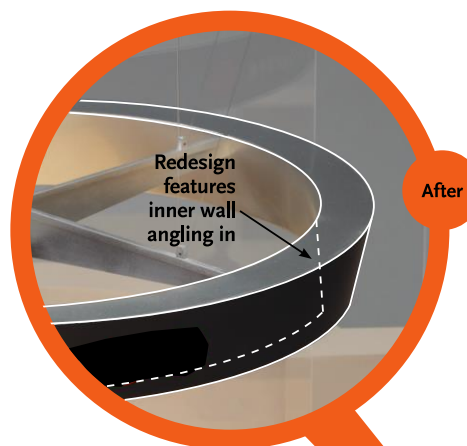


EMS CONTINUAL IMPROVEMENT IN ACTION: Solar Solutions

- > Specifications for on-site solar included in **PLANNING** phase
- > Solar is integrated during **DESIGN** and **CONSTRUCTION**
- > EMS program oversees transition to O&M after **BUILD**
- > Training developed to maintain and **MAXIMIZE** systems



HIGHLIGHT SUSTAINING CREATIVITY



Improving
efficiency
through
Design

Growing a Greener Workforce

- > Developing internal and regional capacity for sustainability
- > Driving culture change
- > Embedding environmental considerations into departments across Metro

CASE STUDY: Metro Communications

“I can help my department by learning the principles of sustainability and adapting them for my team’s specific functions.”

Eileen Hsu

OEI Fellow, ENV SP

Metro Office of Extraordinary Innovation



Metro

2018 Energy & Resource Report

Financing Sustainability

- The power of LEVERAGE at LA METRO
 - Annual \$2M allocation
 - Carbon Credit Sales
 - Green Bonds Sales
- Alternative Forms
 - P3
 - Monetizing benefits
 - Others



Key Take-Aways

- Capitalized on the things we already do
- Vulnerable Populations are Important
- Data-driven decision making/not paralysis
- We cannot do this alone
- Fiscal Responsibility is Key
- We need to look at transit differently





Questions/Discussion

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Conversation

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Website: planning.org/divisions/sustainable

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Awards information packet: sustainableplanning.net or
planning.org/divisions/sustainable/awards/

Awards contact: JenniferK@Rhodeside-Harwell.com