



THURSTON CLIMATE MITIGATION PLAN

Steering Committee



Meeting #7
October 24, 2019



Today's Agenda

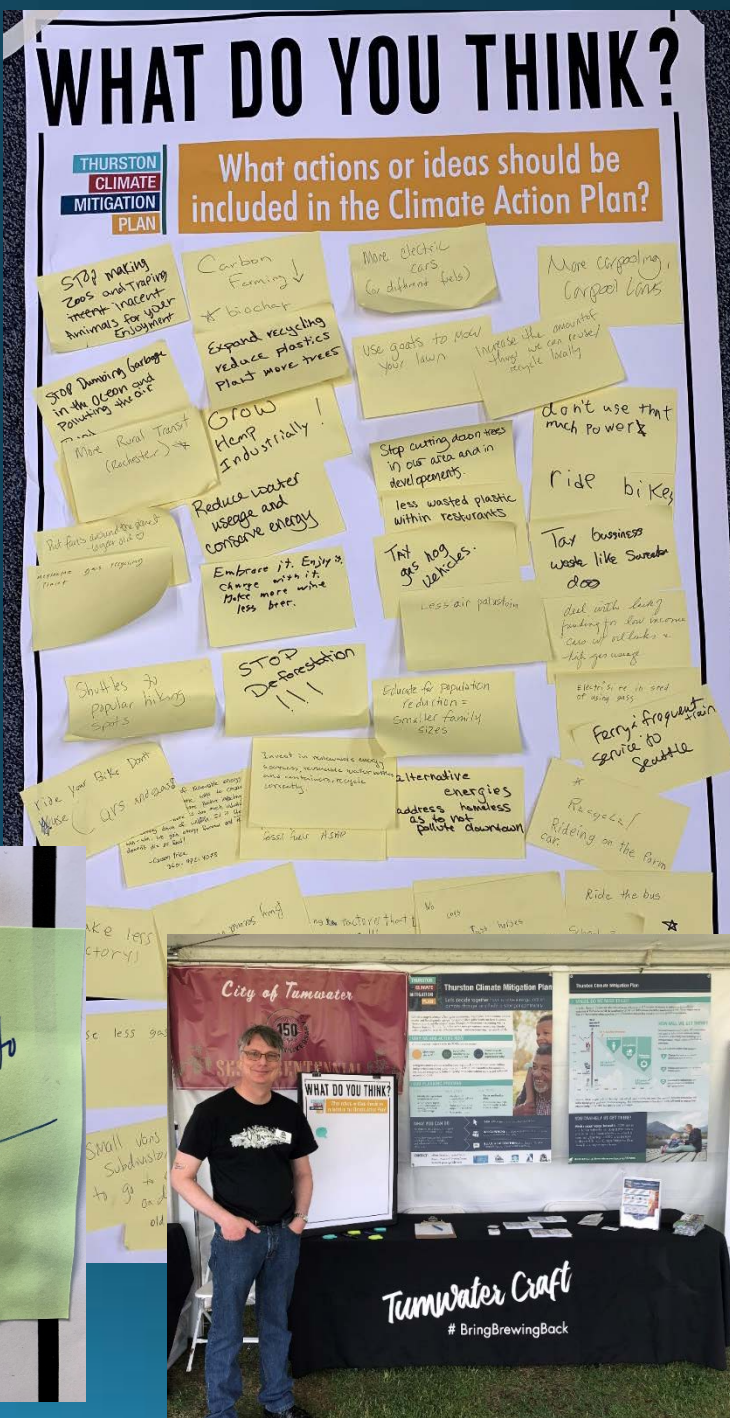
1. Introductions & Project Updates
2. Public Engagement Update
3. Communitywide Actions List
4. Criteria Analysis & Selection
5. Scenarios - Presentation
6. Jurisdiction Updates on Early & Ongoing Actions
7. Public Comments

Today's Materials

- Agenda
- Meeting #6 Summary
- Criteria List
- Final Vision, Goals & Guiding Principles
- Draft Communitywide Action List

Public Engagement Update

- Fairs & Festivals
 - 15 Events; 605 interactions; 208 "action" Post-its →
 - Lacey – 3 events
 - Olympia – 4 events
 - Tumwater – 3 events
 - Thurston County – 5 events (including Fair)
 - ~7 events – could not staff
- Online Survey
 - 1,397 respondents



Public Engagement Update

- Participants showed broadest support for Buildings & Energy sector actions

Make our homes, businesses, and other **buildings more energy-efficient and carbon-smart**, for example through energy retrofits, energy-saving appliances, and sustainable building materials

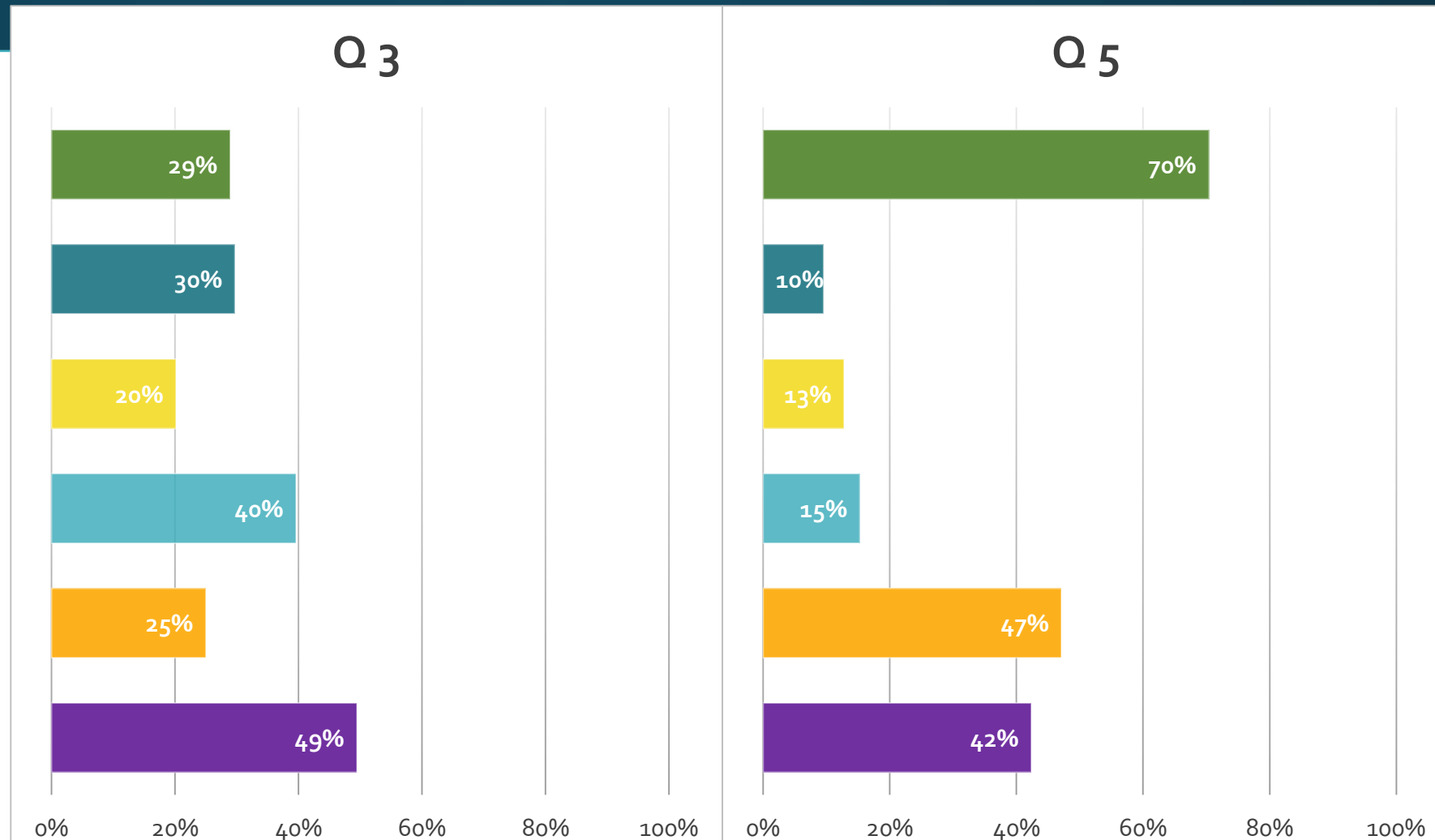
Reduce consumption and waste by recycling and composting more, avoiding single-use items, and repairing or retrofitting instead of buying new

Increase urban density, for example with accessible public transportation, mixed use buildings and affordable housing.

Store more carbon in trees, plants, and soil, for example by preserving large trees, increasing tree canopy, and managing soil for carbon storage in addition to other benefits

Increase the use of **alternative forms of transportation**, such as riding the bus, walking, carpool, vanpool and biking, as well as more fuel-efficient vehicles

Shift from fossil fuels to **more renewable and clean electricity sources** (e.g., from coal to wind/hydro/solar energy)



Public Engagement Update

- Transportation and Land Use actions were a focus at public events and of actions people would like to take
- Q 11: What would you be interested in doing that you are not currently doing?
 - Purchase or drive an all-electric vehicle – 48%
 - Drive a vehicle that gets more than 30 MPG – 25%

Better, more
convenient public
transportation

Encourage
less
driving

and
improve
bus service



Public Engagement Update



- Q11: What would you be interested in doing that you are not currently doing?
 - Invest in solar panels for my home or business (57%)
 - Purchase or drive an all-electric vehicle (48%)
 - Participate in a renewable energy program through my local utility (30%)
 - Drive a vehicle that gets more than 30 MPG in the city (25%)

Public Engagement Update

Q8: What do you think is most important to consider in choosing actions to reduce carbon pollution?



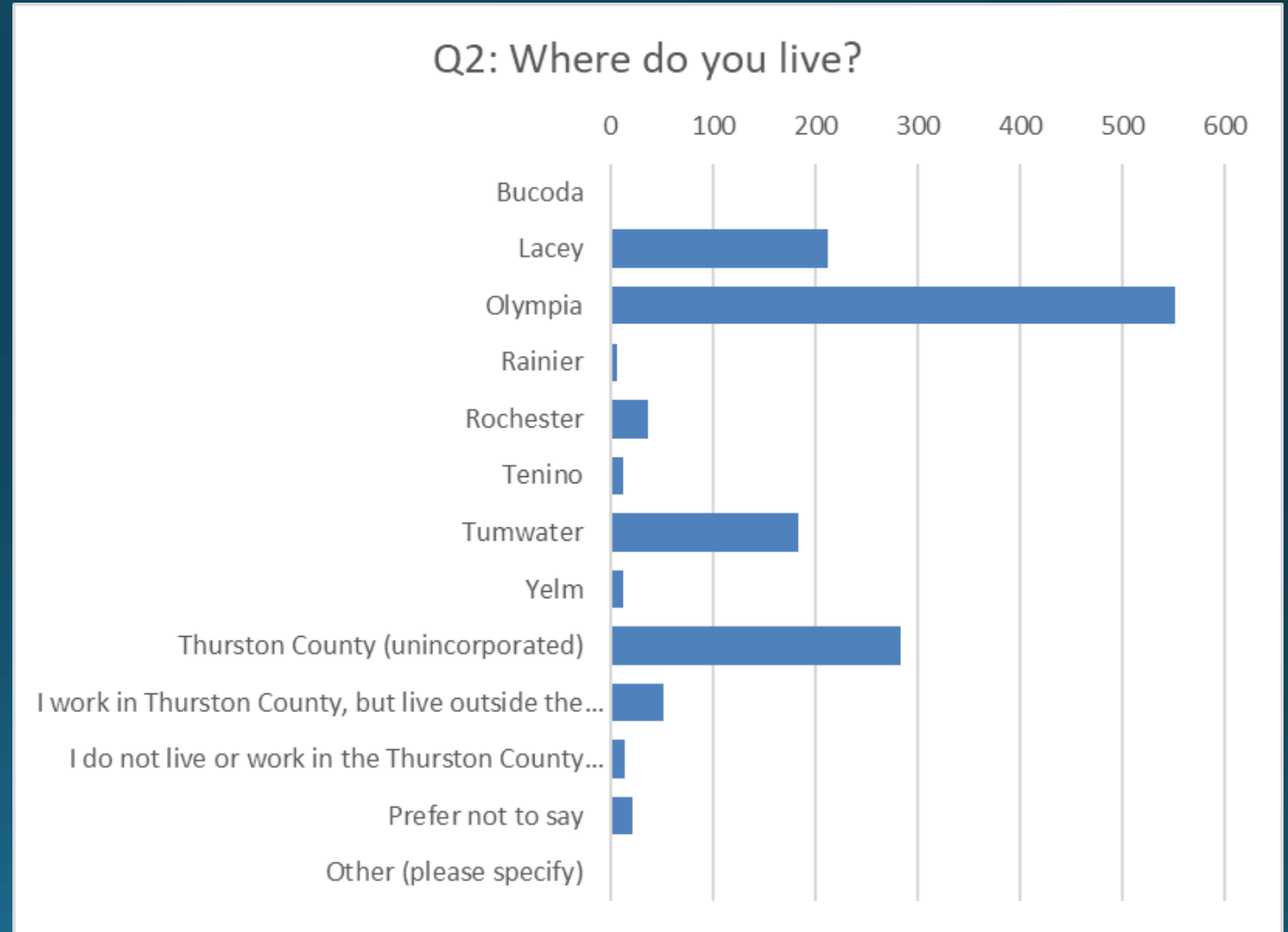
OTHER

- Time/Urgency (15%)
- Accountability (8%)

Make it more affordable

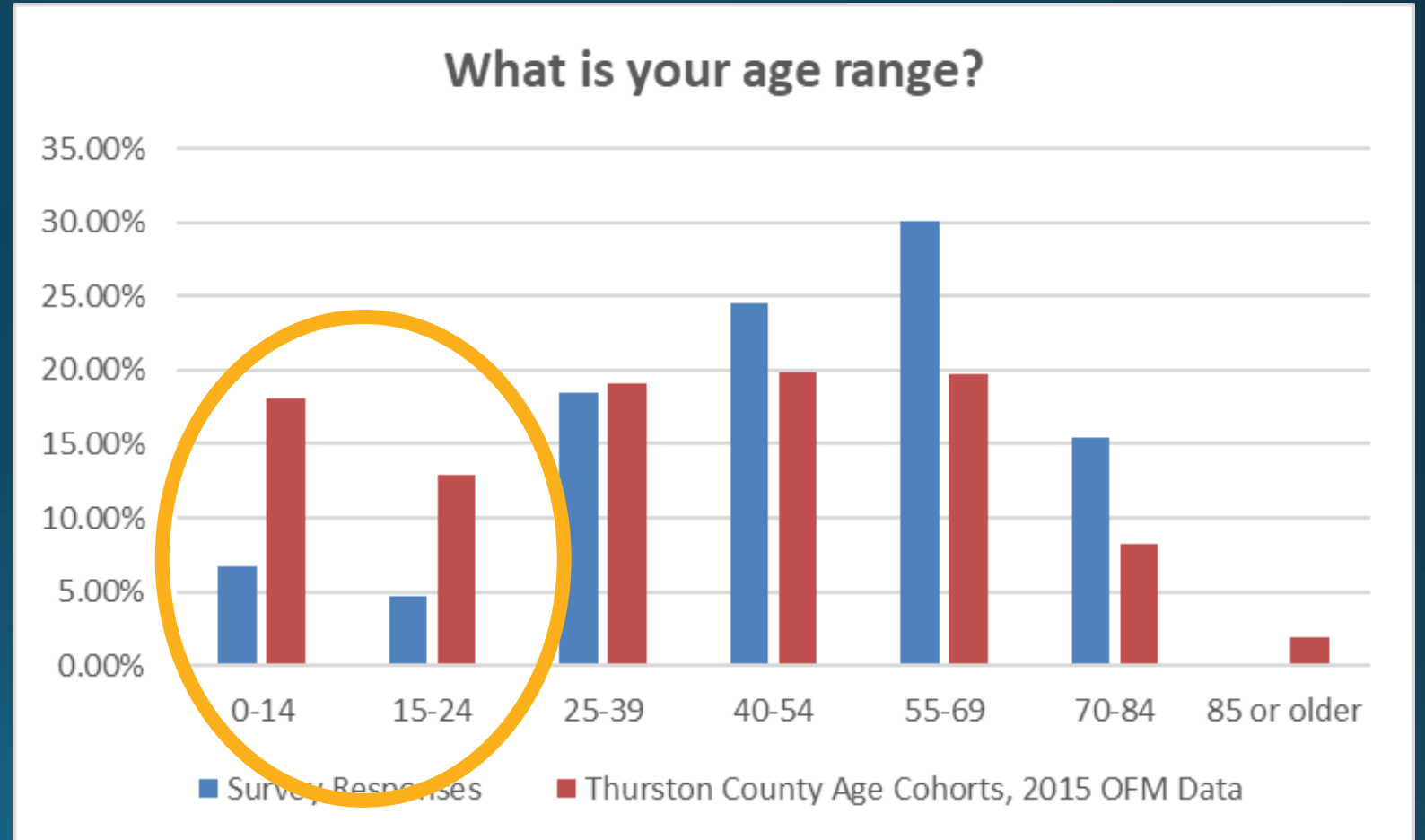
Who took the Public Survey?

- All methods voluntary and self-selecting
- Residence
- Sex
- Age
- Ethnicity
- Income



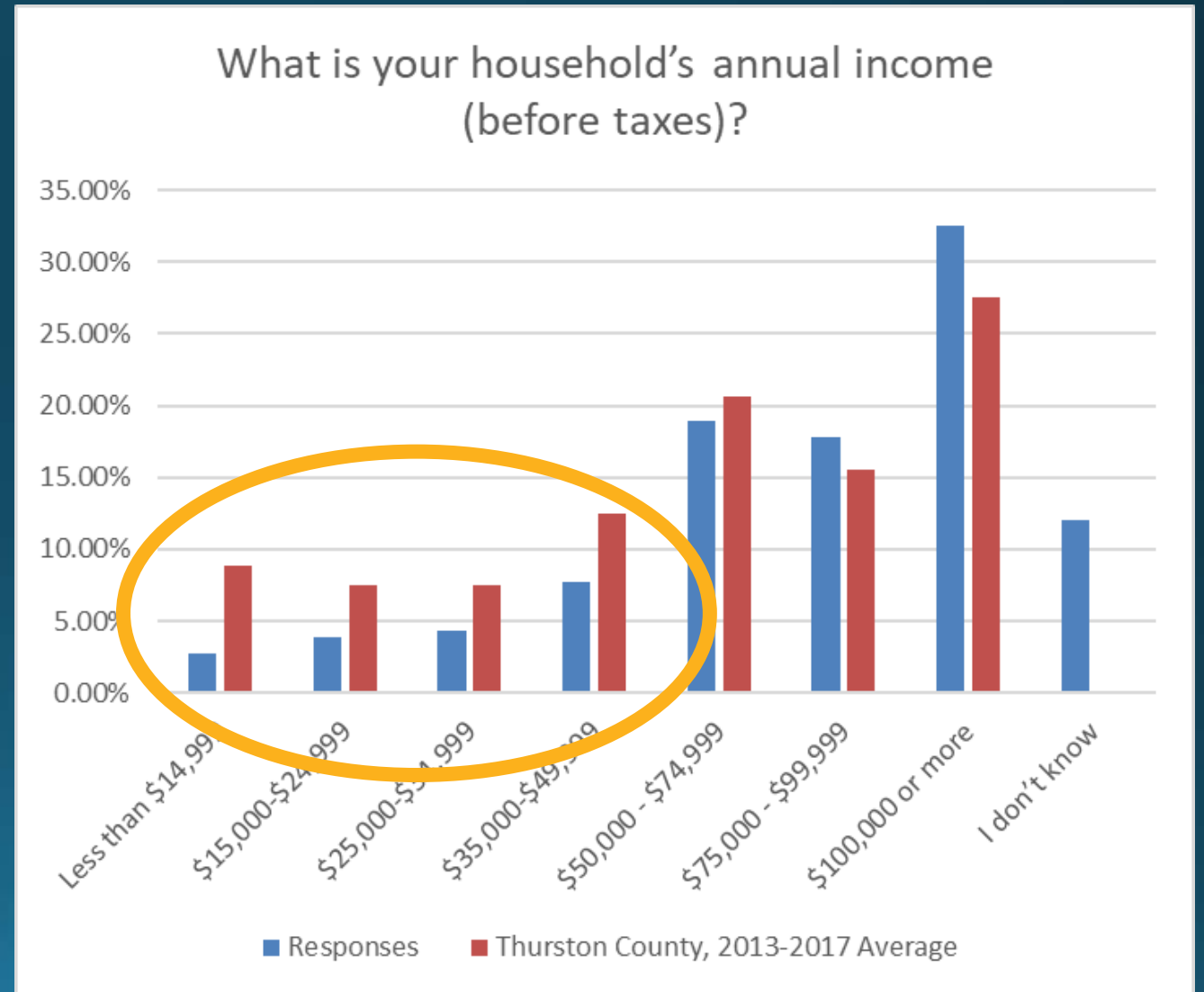
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- All methods voluntary and self-selecting
- Residence
- Sex
- Age
- Ethnicity
- Income



Public Engagement Update

- **Takeaways**

- Overall support and high interest, but need for more general outreach
- Actions people would like to take are things the plan can include
- More outreach needed to engage priority audiences
 - Rural
 - Communities of color
 - Youth
 - Lower income

Communitywide Actions List

- 5 Sector Focus Group Meetings
- 292 Actions
 - Buildings & Energy: 74
 - Transportation & Land Use: 77
 - Water & Waste: 56
 - Agriculture & Forests: 49
 - Cross-cutting: 36
- Incorporating 600+ actions comments from Public Outreach

Strategies buildings & energy

1. Reduce energy use in existing construction
2. Reduce energy use in new buildings
3. Increase the portion of energy used from renewable sources.
4. Convert to cleaner fuel sources.

Strategies transportation & land use

1. Set land use policies that support efficient transportation networks
2. Increase efficiency of the transportation system
3. Increase adoption of electric vehicles
4. Increase the use of public transit
5. Increase use of active forms of travel (bicycling, walking) and more efficient commute modes (carpooling)

Strategies water & waste

1. Increase the efficiency of water and wastewater infrastructure
2. Reduce water consumption
3. Reduce emissions from wastewater treatment operations
4. Divert more solid waste from landfills
5. Generate energy from waste sources
6. Reduce consumption of carbon-intensive goods and services
7. Reduce emissions from solid waste operations

Strategies agriculture & forests

1. Reduce emissions from agricultural practices
2. Support agricultural practices that sequester carbon
3. Support production of less-carbon-intensive agricultural products and local food markets
4. Preserve existing trees, forest lands, and open space
5. Manage forests to sequester carbon
6. Reduce emissions from the urban landscape
7. Increase carbon sequestration in marine environments

Strategies cross cutting

1. Education & Outreach
2. Green Economy
3. Workforce Development
4. Financing Tools
5. Data and Monitoring
6. State/National/International Policy

Communitywide Actions List

- Next Steps:
 - Refine, consolidate, analyze
- Discussion:
 - Any actions missing? Other discussion?

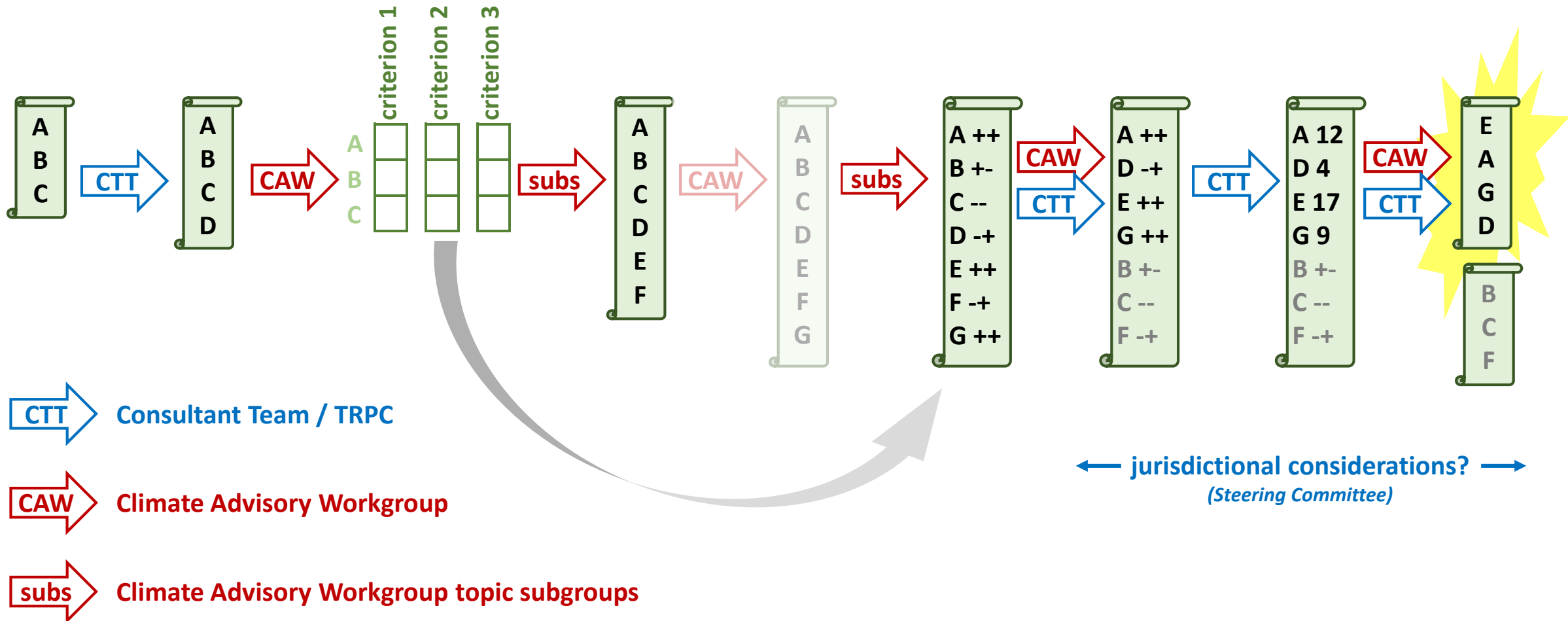
Criteria Selection & Analysis

Actions and Criteria

develop criteria & candidate actions

qualitative sieve

evaluation & prioritization



Choosing Five Criteria for Analysis

efficacy

- gross GHG reduction potential (Mg)
- direct cost (\$)
- total cost (\$)
includes cost avoidance
- speed of deployment (yr)
- behavior change (?)
- readiness (*ordinal*)

co-benefits

- educational value (*ordinal*)
- social equity (*ordinal*)
- quality of life impacts (*nominal*)
- employment (FTE jobs)
- economic benefits (*ordinal*)
- clean air (*nominal*)
- nontoxicity (*nominal*)
- ecosystem health (*nominal*)
- adaptation value (*ordinal*)

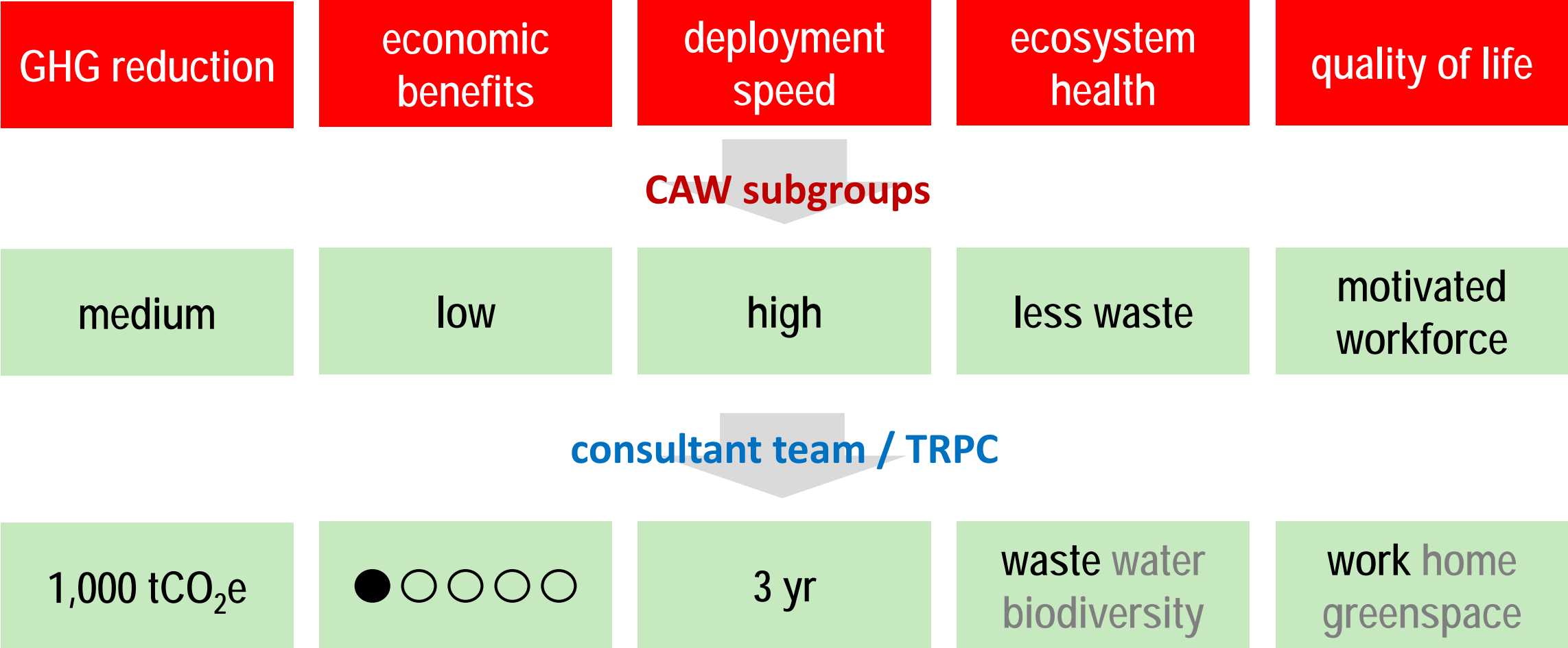
feasibility

- track record (*ordinal*)
- political feasibility (*ordinal*)
- control (*ordinal*)
- sustainability (*nominal*)
- funding resource (*nominal*)
- measurability (*ordinal*)

nominal
ordinal
FTE
Mg

unordered values of the criterion, e.g. “yes, no”
ordered categories, e.g. “low, medium, high”
full-time equivalent
metric tons of CO₂-equivalent

Example Action: Introduce environmentally preferable purchasing (EPP) guidelines for City procurement.



Example: Multi-Criteria Analysis

Scores:
 1 = little or no alignment with criterion
 3 = neutral
 5 = very high alignment with criterion

ID	Actions	Score	Impact	Equity	Cost/ Affordability	Feasibility	Co-Benefits
		Out of 5	20%	20%	20%	20%	20%
B1.1	residential energy performance ratings	0.0	0.0	0.0	0.0	0.0	0.0
B1.2	residential energy audits	0.0	0.0	0.0	0.0	0.0	0.0
B1.3	energy audit outreach	0.0	0.0	0.0	0.0	0.0	0.0
B1.4	rental housing EE incentives	0.0	0.0	0.0	0.0	0.0	0.0
B1.5	rental housing EE baseline	0.0	0.0	0.0	0.0	0.0	0.0
B1.6	low-income weatherization	0.0	0.0	0.0	0.0	0.0	0.0
B1.7	energy efficiency financing	0.0	0.0	0.0	0.0	0.0	0.0
B1.8	residential utility outreach	0.0	0.0	0.0	0.0	0.0	0.0
B1.9	residential utility rebates	0.0	0.0	0.0	0.0	0.0	0.0

Criteria Selection

Criteria	CAW Rank	CAW Rec	Criteria	CAW Rank	CAW Rec
GHG reduction potential	4.7	+	Control	3.6	
Economic benefits	4.2		Political feasibility	3.5	
Speed of deployment	4.1	+	Clean air	3.3	
Sustainability-Builds capacity	4.1	+	Readiness	3.3	+
Ecosystem health	4.1		Adaptation value	3.3	
Social equity	3.9	+	Nontoxicity	3.2	
Quality of life impacts	3.9		Employment	3.2	
Track record	3.9		<u>Educational value for behavior change</u>	3.1	+
Funding resource	3.9		Total cost	3.0	
Measurability	3.8	+	Direct cost	2.9	

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Staff Proposal

Criteria	Description	Connect to GPs	Rationale
GHG reduction potential	The annual quantity of greenhouse gas emissions (GHG) an action will avoid or sequester as of 2030.	#5	Highest priority for all groups.
Speed of deployment	Minimum time possible between decision to recommend an action, and achievement of the annual GHG reduction potential.	#10	Priority for CAW, public survey
Control	One or more of the four project partners can likely influence the implementing party(ies), or can create the necessary regulatory structure.	#2	Helps to shape implementation plan that is action-oriented.
Co-benefits <ul style="list-style-type: none"> <input type="checkbox"/> Ecosystem health <input type="checkbox"/> Social equity <input type="checkbox"/> Economic benefit <input type="checkbox"/> Other 	Supports one or more of the regional goals (aside from #9 – carbon neutrality)	#4, #7, #1	Helps to identify actions that have multiple co-benefits. Social equity a priority factor for CAW, public survey.

Other Criteria for Discussion

Criteria	Description	Connect to GPs	Rationale
Total Cost	Direct cost plus any additional spending required by other entities to respond to the action that reduces GHGs. May include financial benefits or costs avoided as well as costs incurred.		All groups have identified as important information, but least important for initial prioritization of actions.
Builds capacity	Does the action help create or strengthen the infrastructure and resources needed to sustain the action into the future?		Priority for CAW. Could refine to include behavior change-type outreach
Educational value/behavior change	Degree to which the action educates residents in ways that inspire them to adopt behaviors that help achieve emissions reduction targets.	#9	Priority for CAW.
Track Record	Has the proposed action been proven effective? Is there credible documentation of success for similar actions?	#6	
Measurability	A precise GHG reduction can be computed from a quantifiable activity metric.	#5	Ties to “accountability” driver in public survey.

Criteria Selection

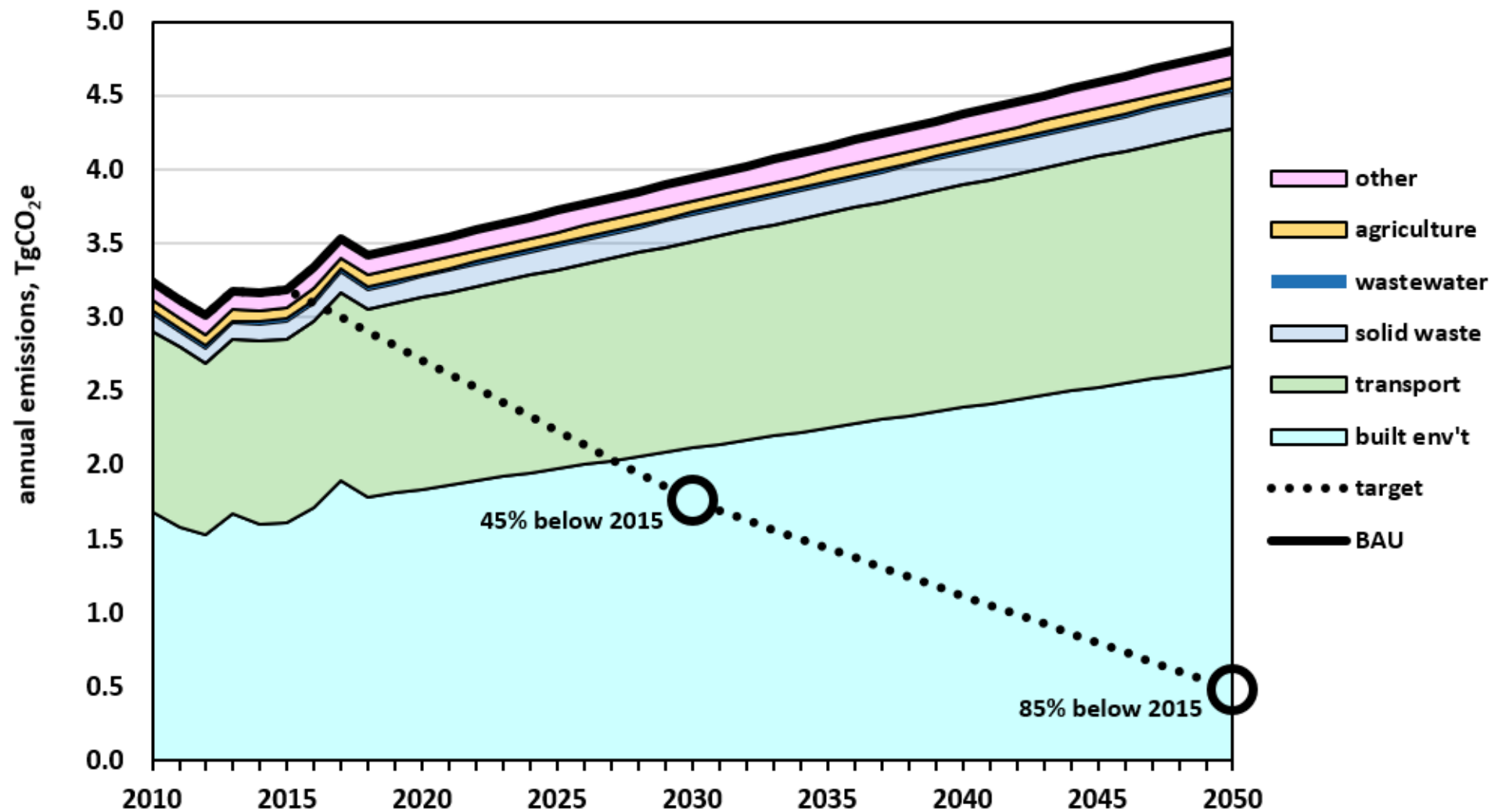
Criteria	SC Rec	Criteria	SC Rec
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Economic benefits		Political feasibility	
Speed of deployment		Clean air	
Sustainability-Builds capacity		Readiness	
Ecosystem health		Adaptation value	
Social equity		Nontoxicity	
Quality of life impacts		Employment	
Track record		Educational value <u>for behavior change</u>	
Funding resource		Total cost	
Measurability		Direct cost	

Scenario Planning

TCAT Inventory Data, 2010-2017

Estimated GHG Emissions in Thurston County (2010 - 2017) (Reported as MTCO2e/yr calculated using AR5 Global Warming Potential (GWP) values) September 29, 2019 DRAFT								
	2010	2011	2012	2013	2014	2015	2016	2017
BUILT ENVIRONMENT								
Emissions associated with the production, transmission and use of electricity in RCI buildings and outdoor lighting.								
Residential	697,142	633,349	612,312	687,850	682,226	684,486	724,391	792,493
Commercial	506,785	448,798	438,160	498,319	495,835	523,698	562,214	588,640
Industrial	75,102	65,947	69,014	74,204	60,828	65,923	82,014	73,853
Outdoor Lighting	2,433	2,036	2,055	5,378	6,856	7,939	6,596	5,892
Electricity use - lighting & RCI buildings	1,281,462	1,150,130	1,121,541	1,265,750	1,245,745	1,282,046	1,375,214	1,460,878
Emissions associated with the production, distribution and use of natural gas in RCI buildings								
Residential (Nat Gas)	207,311	225,233	216,199	213,595	206,992	187,690	197,477	243,758
Commercial	103,152	113,258	111,259	108,625	100,005	92,984	94,142	139,738
Industrial	26,497	29,281	30,923	31,706	7,043	6,620	6,504	7,799
Use of Fuel in RCI Stationary Comb.	336,959	367,772	358,381	353,926	314,040	287,294	298,124	391,296
Emissions associated with the production, distribuion and use other residential heating fuels								
Residential (Fuel Oil)	8,625	8,508	6,083	5,790	5,758	4,944	4,806	4,045
Residential (LPG)	44,161	43,757	32,694	30,795	26,782	22,939	22,192	29,980
Residential Wood	7,922	11,304	8,205	11,879	11,370	8,539	8,539	8,539
Use of Other Fuels in residential	60,707	63,569	46,981	48,463	43,911	36,422	35,536	42,564
BUILT ENVIRONMENT	1,679,129	1,581,471	1,526,904	1,668,139	1,603,696	1,605,762	1,708,875	1,894,737
TRANSPORTATION								
Passenger Vehicles	565,830	563,772	537,631	548,214	561,982	575,761	584,257	584,138
Light Duty Trucks	241,564	232,125	220,163	225,386	241,924	240,690	249,324	245,738
Medium/Heavy Duty Trucks	308,849	299,803	288,164	299,350	307,172	324,752	326,742	339,872
Motorcycles	2,916	2,839	3,157	3,244	3,334	2,959	3,015	3,005
Off-Road Vehicles	107,018	114,979	109,156	104,802	122,091	99,851	97,963	101,625
Public Transit	IE	IE	IE	IE	IE	IE	IE	IE
TRANSPORTATION	1,226,177	1,213,518	1,158,272	1,180,996	1,236,503	1,244,012	1,261,302	1,274,378
SOLID WASTE								
Methane emissions	112,912	103,430	100,041	104,007	108,574	115,467	122,852	134,080
Process emissions	2,709	2,482	2,400	2,495	2,605	2,770	2,948	3,217
SW Transportation	1,694	1,551	1,500	1,560	1,629	1,732	1,833	1,997
Composting	2,302	1,966	2,351	1,997	1,912	1,667	1,671	1,792
SOLID WASTE	119,617	109,428	106,292	110,060	114,720	121,636	129,304	141,086
WASTEWATER TREATMENT								
Budd Inlet WWTP	447	404	509	446	429	460	448	495

Business As Usual (BAU) Scenario



Dashboard for Estimating Reduction Activities

User Dashboard - enter assumptions in yellow cells

activity	completion as of		physical reduction		
	2030	2050	2030	2050	units
gas-to-electric space heating conversions (note 1)					
residential	0%	0%	0	0	therms NG
commercial	0%	0%	0	0	therms NG
decarbonization of electricity	0%	0%			
reduction in per-capita automobile travel	0%	0%	0	0	mm VMT
decarbonization of all vehicle fuels	0%	0%			
reduction in food waste	0%	0%	0	0	tons
overall reductions					
re BAU	0%	0%	0	0	tCO ₂ e
re 2015	-23%	-51%	-746,875	-1,615,221	tCO ₂ e
target re 2015	45%	85%			

Activities to Reduce GHG Emissions (starter list)

User Dashboard - enter assumptions in yellow cells

activity	completion as of		physical reduction		
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Enter % Reductions by 2030 and 2050

User Dashboard - enter assumptions in yellow cells

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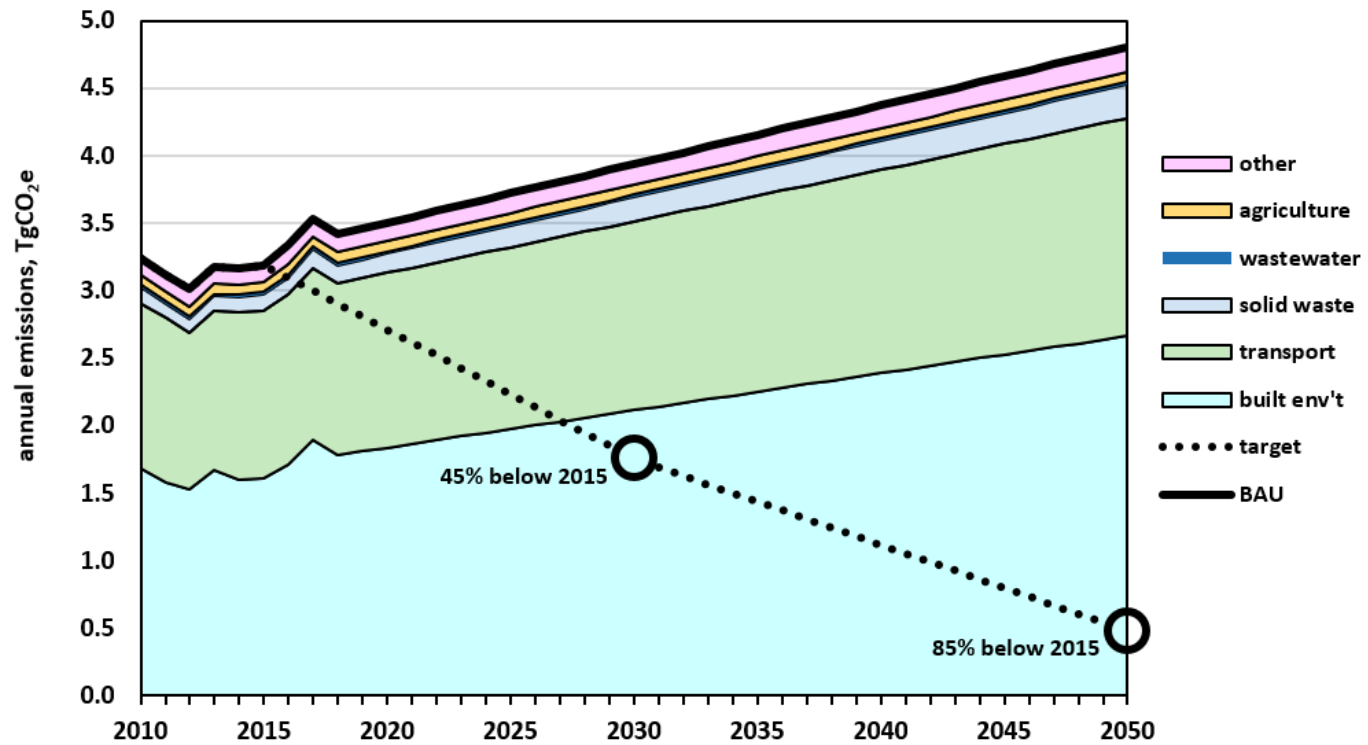
Results - Numerical and Graphical

User Dashboard - enter assumptions in yellow cells

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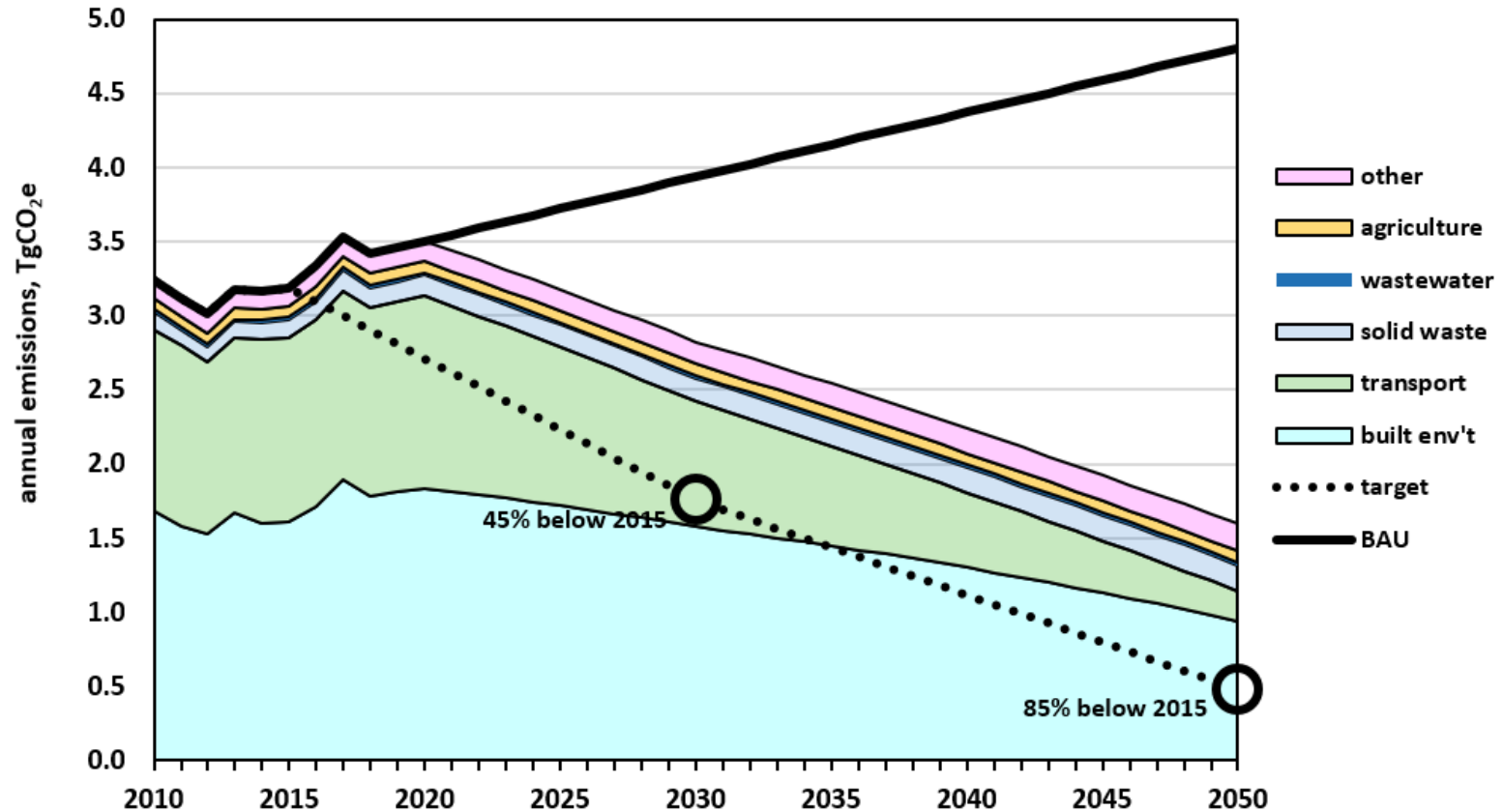
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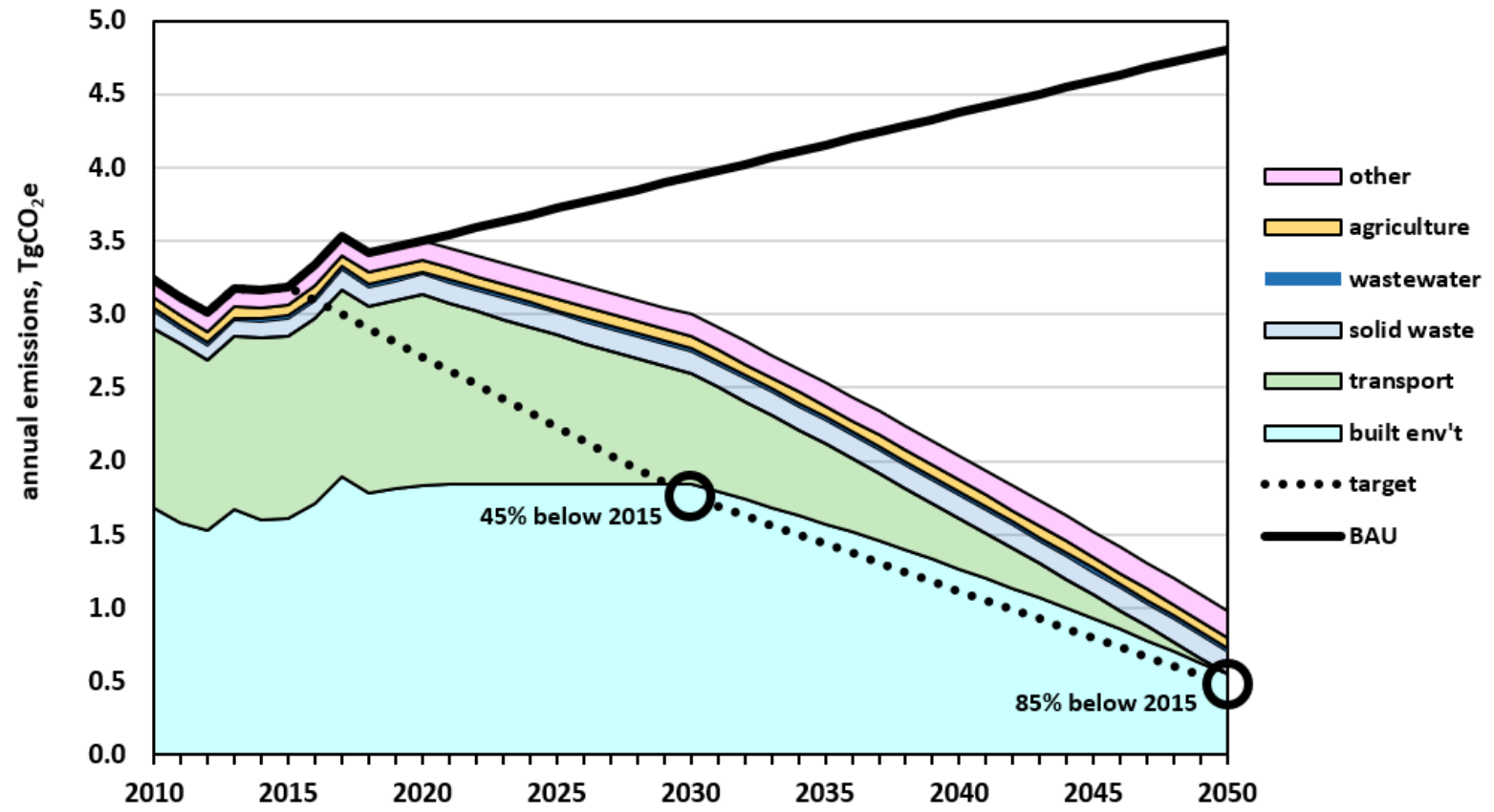
notes

1 Value is the percentage of existing natural gas users converted (not the percentage of all households/businesses).

activity	completion as of		physical reduction		
	2030	2050	2030	2050	units
gas-to-electric space heating conversions (note 1)					
residential	30%	80%	5,514,866	14,706,310	therms NG
commercial	30%	80%	3,250,089	8,666,904	therms NG
decarbonization of electricity	30%	80%			
reduction in per-capita automobile travel	30%	80%	300	799	mm VMT
decarbonization of all vehicle fuels	30%	80%			
reduction in food waste	30%	80%	22,618	60,315	tons
overall reductions					
re BAU	28%	67%	1,112,645	3,208,160	tCO ₂ e
re 2015	11%	50%	365,770	1,592,939	tCO ₂ e
target re 2015	45%	85%			













activity	completion as of		physical reduction		
	2030	2050	2030	2050	units
gas-to-electric space heating conversions (note 1)					
residential	50%	100%	9,191,444	18,382,887	therms NG
commercial	70%	100%	7,583,541	10,833,631	therms NG
decarbonization of electricity	10%	100%			
reduction in per-capita automobile travel	50%	100%	500	999	mm VMT
decarbonization of all vehicle fuels	30%	100%			
reduction in food waste	30%	100%	37,697	75,394	tons
overall reductions					
re BAU	24%	80%	938,939	3,821,426	tCO ₂ e
re 2015	6%	69%	192,064	2,206,205	tCO ₂ e
target re 2015	45%	85%			










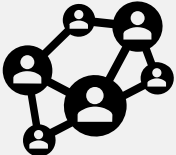



Next Steps

- Confirm list of criteria for evaluation (today)
- Assess actions
- Develop and evaluate scenarios
- Report back at January meeting

Next Steps: Proposed 2019 Schedule

	July	August	September	October	November	December
Steering Committee		Meeting #6 		Meeting #7 		
Advisory Workgroup	Meeting #2 	Subgroups 	Subgroups 	Meeting #3 	Subgroups 	
Community Engagement	Festivals, Briefings 	Festivals, Briefings 	Festivals, Briefings 	Website Updates	Website Updates	Website Updates

Next Steps: Proposed 2020 Schedule

	January	February	March	April	May	June
Steering Committee	Meeting #8 	Meeting #9 			Meeting #10 	Meeting #11 
Advisory Workgroup	Meeting #4 	Meeting #5 			Meeting #6 	
Community Engagement	Website Updates	Website Updates	Network check in Survey, Open House 		Public Comment 	Public Comment 

Individual Jurisdictions:
Actions & Implementations

Thank You!

Staff Contact

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