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Lacey Fire District #3
Puget Sound Regional Council
The Evergreen State College
Thurston Economic
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MEMORANDUM

TO: Chris Hawkins (Thurston County);
Rich Hoey and Danelle MacEwen (Olympia);
Jessica Brandt (Lacey);
Brad Medrud (Tumwater)

FROM: Michael Burnham, Veena Tabbutt, and Marc Daily (TRPC)

DATE: May 11, 2018

SUBJECT: Regional climate mitigation plan policy review and emissions benchmarks recommendation (Task 2 deliverable)

Overview:

The purpose of this memorandum is to provide information about the Thurston County region’s varying climate policies and emissions targets so that the project team’s jurisdictional staff members can recommend to their respective policymakers a common emissions baseline and reduction targets to guide Phase 2 of the regional climate mitigation plan.

Per Task 2 of the project’s Phase 1 scope of work, TRPC: reviewed and summarized climate policies adopted by Thurston County, Olympia, Lacey, and Tumwater [*Attachment 1*]; assessed and utilized updated emissions inventories for Thurston County jurisdictions [*Attachment 2*]; and, summarized — for the sake of comparison — emissions-reduction targets recommended by international climate scientists and adopted by state and local governments.

The memo concludes by recommending that TRPC’s four partner jurisdictions adopt common emissions-reduction targets of **45 percent below 2015 levels by 2030** and **85 percent below 2015 levels by 2050**. This would put all four jurisdictions on the same pathway to hitting the emissions levels associated with the Sustainable Thurston plan’s science-based targets.

As an alternative option to consider, TRPC also calculated emissions reductions for 2035 and 2050 from a 2010 baseline.



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Emissions Targets Discussion:

Since 1990, Thurston County, Olympia, Lacey, and Tumwater have adopted, by plan or resolution, greenhouse gas emissions-reduction goals and targets that vary widely [Attachment 1].

The Sustainable Thurston plan — adopted by TRPC’s council in late 2013 and accepted by the four jurisdictions in early 2014 — includes a priority goal to “move toward a carbon-neutral community.” This goal includes supporting emissions-reduction targets for the Thurston County region (i.e., all incorporated and unincorporated areas of Thurston County):

- **Achieve a 25% reduction of 1990 greenhouse gas levels by 2020;**
- **Achieve a 45% reduction of 1990 greenhouse gas levels by 2035; and**
- **Achieve an 80% reduction of 1990 greenhouse gas levels by 2050.**

The targets are science-based. The Intergovernmental Panel on Climate Change’s Fourth Assessment Report¹, published in 2007, concluded that the United States and other industrialized countries would need to reduce emissions in the range of 80-95 percent from 1990 levels by 2050 to stabilize atmospheric concentrations of carbon dioxide and other heat-trapping gases at 450 parts per million. IPCC scientists contend that hitting the stabilization target, expressed as 450 ppm CO₂eq, will “likely” keep the global average temperature from rising 2° Celsius (3.6° Fahrenheit) above pre-industrial levels (i.e., before 1870) by the end of this century.²

The United Nations Framework Convention on Climate Change’s “Paris Agreement,” which the United States and other nations brokered in late 2015, includes the 2°C target but also stresses the importance of pursuing a more aggressive 1.5° C (2.7° F) target to mitigate the most dangerous climate change risks.³ Such risks include warming oceans, melting polar ice, and rising seas sufficient to displace millions of coastal residents around the world in the centuries ahead.

¹ IPCC (2007). *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

² IPCC (2014). *Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

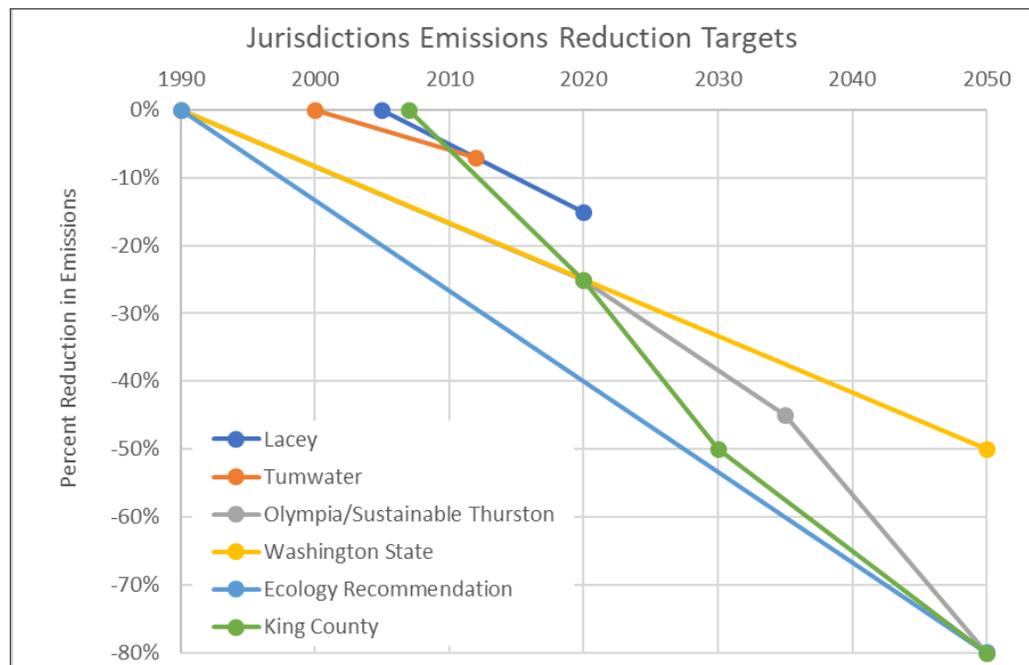
³ Figueres, C. (2015). Proceedings from the United Nations Framework Convention on Climate Change Conference: The Paris Agreement., *Article 2, Section 1*.

Olympia integrated the Sustainable Thurston emissions targets in its comprehensive plan. The other three jurisdictions have adopted different emissions targets:

- **Thurston County:** Move toward zero emissions from Thurston County operations by an unspecified date. [[Resolution No. 14395](#)]
- **Olympia:** Hit Sustainable Thurston’s regional emissions targets (communitywide), as adopted in the Olympia Comprehensive Plan [[Olympia Comprehensive Plan, Goal PN8.1](#)]
- **Lacey:** Reduce municipal and communitywide emissions to 15 percent below 2005 levels by 2020. [[Lacey Comprehensive Plan, Environmental Element](#)]
- **Tumwater:** Reduce municipal emissions to 7 percent below 2000 levels by 2012, and maintain that level beyond 2020. [[Tumwater Climate Action Plan](#)]

Washington’s 2050 emissions target, adopted in 2008, is 50 percent below 1990 levels, or 70 percent below the State’s emissions that year; the law also set interim targets for 2020 and 2035.⁴ In 2016, the state Department of Ecology recommended revising the targets (e.g., to 80 percent below 1990 levels by 2050) so they’re closer to what the IPCC suggested.⁵

Comparatively, in 2014 the King County Growth Management Planning Council — composed of elected officials from across King County — adopted common targets to reduce countywide emissions, compared to a 2007 baseline: 25% by 2020; 50% by 2030; and, 80% by 2050. King County promulgated the targets as Policy E-210 in the [King County Comprehensive Plan](#), and the County is working with 13 cities within as part King County-Cities Climate Collaboration ([K4C](#)) to coordinate their climate action.



⁴ RCW 70.235.020(1)(a) <http://apps.leg.wa.gov/rcw/default.aspx?cite=70.235.020>

⁵ Rees, S. (2016). *Washington Greenhouse Gas Emissions Reduction Limits*. Washington Department of Ecology. Olympia, WA. <https://fortress.wa.gov/ecy/publications/SummaryPages/1601010.html>

Emissions Baseline Discussion:

To ensure that Thurston County, Olympia, Lacey, and Tumwater are using sound emissions data and working within a common framework, TRPC proposes that the project team members recommend to their respective policymakers a common emissions baseline year (e.g., 2010 or 2015) and emissions-reduction targets through 2050. Such figures would provide the framework for Phase 2 of this project, which could include analyzing policies and creating jurisdiction implementation plans with mitigation actions sufficient to meet the common targets [Pages 7 and 8].

Question: Should 2010 or 2015 be the common baseline year instead of 1990?

Thurston County's (all incorporated and unincorporated areas) emissions total in 1990 was 2,088,032 metric tons of carbon dioxide equivalent (MTCO_{2e}), according to an estimate by the Thurston Climate Action Team (TCAT)⁶. The nonprofit estimated the figure by using U.S. Census Bureau population data and a 2007 Washington Department of Ecology estimate of per capita emissions.

TCAT multiplied Thurston County's 1990 population [161,238] by Washington's per-capita emissions [12.95 MTCO_{2e}]. The latter figure does not include emissions associated with producing jet fuel and smelting aluminum, industrial activities that occur in other parts of the state but not in Thurston County.

$$161,238 \text{ people} \times 12.95 \text{ MTCO}_2e = 2,088,032 \text{ MTCO}_2e$$

Using the 1990 baseline figure, Thurston County would need to reduce its emissions to 417,606 MTCO_{2e} to hit the 2050 Sustainable Thurston target [80% reduction of 1990 levels]. TRPC used this 2050 emissions total as a benchmark for its recommendation in the next section of this memo.

⁶ Thurston Climate Action Team (2014). *Estimating Greenhouse Gas Emissions and Targets in Thurston County*. White paper retrieved on May 1, 2018, from Thurston Thrives website: http://www.co.thurston.wa.us/health/thrives/pdfs/EstimatedGreenhouseEmissions_021816.pdf

Emissions Baseline & Targets Recommendation:

The Thurston Climate Action Team’s emissions inventories for the years 2010-2016 incorporate energy and transportation data from Puget Sound Energy (PSE), TRPC, and other sources, so these recent inventories provide more accurate figures for the Thurston County region’s annual greenhouse gas emissions than the 1990 estimate. For this reason, TRPC recommends that the regional climate mitigation plan partners use either a 2010 or 2015 baseline instead of a 1990 baseline yet still aim for the emissions level associated with Sustainable Thurston’s 2050 target. This would require revising the percentage reduction targets for the 2030s and 2050 from a new baseline year, as well as eliminating the near-term 2020 target because of its infeasibility.

TRPC has prepared two options — “A” and “B” — for the the project team’s consideration. The options are shown below and in the table and graph on Page 6.

Option A:

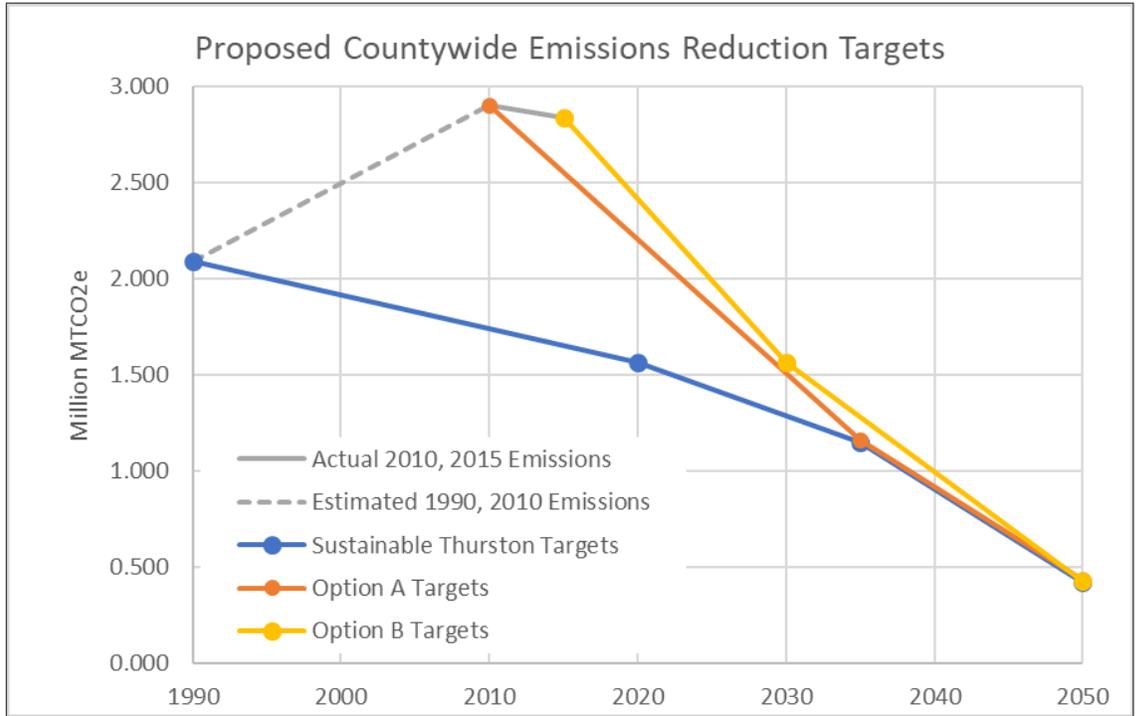
- **Achieve a 60% reduction of 2010 greenhouse gas levels by 2035**
- **Achieve an 85% reduction of 2010 greenhouse gas levels by 2050.**

Option B:

- **Achieve a 45% reduction of 2015 greenhouse gas levels by 2030**
- **Achieve an 85% reduction of 2015 greenhouse gas levels by 2050.**

Both options would have the jurisdictions aim for Sustainable Thurston’s 2050 emissions target of roughly 400,000 MTCO₂e, as well as do their part to keep the global average temperature from rising more than 2°C. **TRPC recommends that the jurisdictions choose Option B** for several reasons, however: It uses the nearer-term 2030 benchmark favored by Olympia and the 2015 baseline included in the countywide “carbon wedge” analysis that TRPC commissioned in 2017 [Page 8].

Recommendation: Adopt common emissions-reduction targets of 45 percent below 2015 levels by 2030 and 85 percent below 2015 levels by 2050.



	Sustainable Thurston 1990 Baseline		Option "A" 2010 Baseline		Option "B" 2015 Baseline	
	Million MTCO ₂ e	% reduction from 1990	Million MTCO ₂ e	% reduction from 2010	Million MTCO ₂ e	% reduction from 2015
Baseline Target	2.088	0%	2.905	0%	2.840	0%
2020	1.566	-25%	-	-	-	-
2030	-	-	-	-	1.562	-45%
2035	1.148	-45%	1.16	-60%	-	-
2050	0.418	-80%	0.44	-85%	0.43	-85%

Note: TRPC used TCAT's emissions data to calculate the table's figures and plot the graph.

Phase 2 Approach Discussion:

By agreeing to a common 2015 emissions baseline and 2030 and 2050 targets, the four jurisdictions could create during Phase 2 a menu of expanded and new mitigation actions for the Thurston County region. Next, a consultant could be tasked with quantifying the emissions-reduction impact of such actions. Finally, each jurisdiction could create and adopt its own implementation plan with a suite of actions sufficient to reduce the jurisdiction's *percentage share* of the Thurston County region's total greenhouse gas emissions by 2030 and 2050. Like King County's K4C, Thurston County's jurisdictions could coordinate the implementation efforts going forward.

This collaborative approach would provide each Phase 2 partner flexibility in how it reduces its carbon footprint. Further, other jurisdictions within Thurston County or beyond could adopt the plan's science-based targets and choose from the menu of actions to create an implementation plan that reflects the community's social, economic, and environmental values.

The table below shows each Phase 1 partner jurisdiction's 2015 emissions figure as well as emissions figures for 2030 and 2050, per the Option B targets. The three cities and unincorporated Thurston County constituted 96 percent of Thurston County's total emissions in 2015; the smaller incorporated cities and towns in south Thurston County accounted collectively for the remaining 4 percent of the emissions.

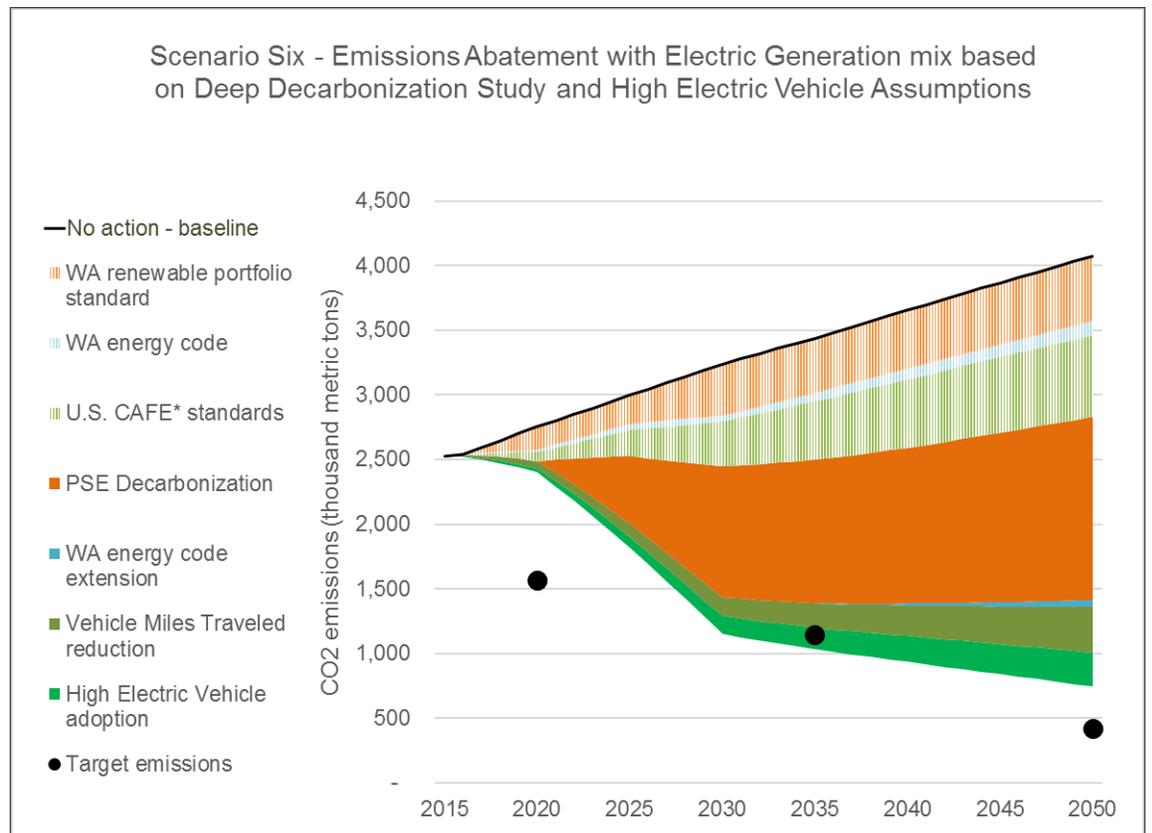
Option "B" Emissions Baseline & Targets				
Jurisdiction	2015 baseline (MTCO _{2e})	Share of 2015 emissions (percent)	2030 target (MTCO _{2e})	2050 target (MTCO _{2e})
Thurston County (all)	2,840,005	100	1,562,003	426,001
Thurston County (unincorporated)	1,296,796	46	713,238	194,519
Olympia (incorporated)	656,814	23	361,248	98,522
Lacey (incorporated)	449,770	16	247,374	67,466
Tumwater (incorporated)	324,748	11	178,611	48,712

Note: The Thurston Climate Action Team calculated the 2015 emissions figures, shown as the "baseline." TRPC used TCAT's data to calculate the percentage share figures for 2015 and the "target" figures for 2030 and 2050.

In 2017, TRPC hired a Seattle-based consultant team composed of the Stockholm Environment Institute and Clean Energy Transition to plot Sustainable Thurston’s 2020, 2035, and 2050 emissions targets in a countywide “carbon wedge” analysis [Attachment 3]. The consultant team’s graph [below] shows the countywide emissions-reduction impact of existing state and federal policies (e.g., the Washington Energy Code) and potential policies that could be a part of a regional climate mitigation plan (e.g., zeroing out Puget Sound Energy’s power generation from coal and other fossil fuels, also known as “decarbonization”).

The purpose of the carbon wedge analysis was to show potential pathways to hitting the Sustainable Thurston targets. If the regional climate mitigation plan partners would like, Phase 2 could include having a consultant assess in another carbon wedge what it would take to hit the new common emissions targets (e.g., Option B targets).

PSE has not committed to decarbonization, but the utility has committed to reducing its emissions 50 percent by 2040. The impact of PSE’s comparatively modest climate goal, for example, could be shown in the new carbon wedge analysis.



* “U.S. CAFE” represents the Obama administration’s national “Corporate Average Fuel Economy” standards for passenger cars and light-duty trucks built in model years 2017 and beyond.