

Memorandum

To: Ross Freeman, CAP Project Manager, City of Mercer Island
 From: Andrea Martin, Climate Action Director, Cascadia Consulting Group, Inc.
 Date: August 23, 2022
 Subj: Climate Action Plan: Action List Recommendations (Revised)

This memorandum provides updated consultant analysis and recommendations for refinement of the CAP initial action list.

Summary

We understand that the City may wish to refine the original CAP action list to fewer total actions than 58. Based on this request, our analysis of the Sustainability Committee rankings, and other assessment, we recommend the following list of **35 actions be substituted for the 36 “B+ & above” actions** (see page 5 for an explanation of methodology) in order to achieve the greatest GHG and resiliency improvements possible under a reduced suite of actions.:

Focus Area	Strategy	ID	Action Short Name	Action Description
Buildings & Energy	Transition to non-fossil building energy.	BE1.1	All-electric building code	Adopt energy code to require all-electric new construction for commercial and residential buildings.
		BE1.3	Heat pump rebates & education	Partner with PSE and other regional partners to expand regional electric heat pump pilot program and campaign to replace natural gas-powered furnaces and increase energy efficiency in existing commercial and residential buildings.
		BE1.6	Expand solar energy storage & grid resiliency	Accelerate improvements to the energy grid and storage to facilitate the transition to renewable energy sources. Improvements may include subsidy and grant programs to reduce the cost of battery storage in existing buildings and electric vehicle charging/storage system installations.
		BE1.7	Green Power Program	Conduct education and outreach to encourage businesses and residents to enroll in Puget Sound Energy's (PSE) Green Power Program.
		BE1.8	Contractor incentive & training program	Work with regional jurisdictions and agencies to expand upstream and midstream incentives for building electrification retrofits to local distributors and contractors. Create

Focus Area	Strategy	ID	Action Short Name	Action Description
				or promote a contractor training and/or certification program focused on efficient, electric heat pump installation.
	Reduce energy use in new and existing buildings.	BE2.2	State building code enforcement	Build awareness of the Washington Clean Buildings Act requirements that all new and existing commercial buildings over 50,000 s.f. must reduce their Energy Use Intensity 15% compared to the 2009-2018 average. Connect commercial building owners with state resources to comply with the Act.
		BE2.3	Point-of-sale green building requirements	Require point-of-sale disclosures for residential or commercial buildings to either (1) disclose energy use or (2) implement energy retrofits at point of sale.
Transportation	Transition to cleaner vehicles & equipment.	TR1.1	EV-readiness requirements	Introduce electric vehicle (EV) charging readiness requirements for new buildings that exceed state building code requirements.
		TR1.2	EV charging incentives & rebates	Expand incentives for EV charging for multi-family homes, apartment buildings, major employers, and parking garages.
		TR1.3	EV parking requirements	Adopt new building codes that exceed state building codes requiring all new buildings provide EV charging stations in at least 10% of their parking spaces.
		TR1.4	Public EV infrastructure plan & implementation	Develop and implement an EV charging infrastructure plan that outlines a roadmap for installing EV chargers throughout the city. Plan should include details on charger types, locations, and funding available through partnerships, incentives, and targeted investments.
		TR1.7	Electric lawn & construction equipment	Encourage the use of electric gardening equipment (e.g., lawn mowers, leaf blowers) through educational campaigns, rebates, and incentives.
		TR1.8	Electric school buses	Work with Mercer Island School District to transition school buses to electric.
	Reduce vehicle travel.	TR2.1	TOD & TDM policy for new/redevelopment	Promote dense, mixed-use, and transit-oriented developments (TOD), especially near the new light rail station, through incentives or requirements for transportation demand management (TDM) measures, including minimize parking structures in favor of transit, rideshare, walking, and biking.
		TR2.2	Last-mile light rail connection	Ensure multi-modal last-mile connections to the light rail station, such as through walking, biking, transit, and electric vehicle. Could include expansion/introduction of bike/scooter share program.
		TR2.3	Complete streets policy	Adopt a "complete streets" policy that prioritizes bicycle, pedestrian, and transit accessibility.
		TR2.4	Parking restrictions	Encourage the use of alternative transportation by expanding time limited parking in Town Center and exploring other parking restrictions in high traffic areas on the Island.
		TR2.6	Bike trail expansion	Increase the number, length, and safety of dedicated bike lanes and trails. Plan for the expansion of commuter e-bikes.
	Reduce aviation emissions.	TR3.1	Regional aviation coordination	Partner with peer jurisdictions, regional airports, and airlines to reduce regional aviation emissions by promoting the use of sustainable aviation fuel and adoption of aviation fuel efficiency measures.
		TR3.3	Air travel alternatives	Provide education materials around alternative to air travel for conferences and business travel.

Focus Area	Strategy	ID	Action Short Name	Action Description
Consumption & Disposal	Reduce waste generation & landfill disposal.	CD1.1	Recycling space/access requirements	Adopt ordinances or new building guidelines requiring that buildings set aside adequate space for recycling collection.
		CD1.2	Mandatory composting/recycling	Phase in mandates for residential and commercial recycling and composting, and enforce sorting by an identified year, especially for multi-family buildings and commercial properties where contamination is high.
	Consume sustainably.	CD2.2	Local retail options	Showcase, encourage, and expand local retail shopping.
		CD2.4	Community gardens	Expand community gardens and participation.
Natural Systems	Increase urban tree canopy and green space.	NS1.1	Tree preservation ordinance	Develop a tree retention and preservation ordinance that increases scrutiny and review over tree removal in certain areas by prioritizing retention of healthy trees and tree canopy.
		NS1.2	Tree planting incentive program	Develop a program to incentivize residents and large property owners to plant the right tree in the right place and sustain existing trees with reduced cost or free trees.
	Foster healthy & resilient natural systems.	NS2.3	Green stormwater infrastructure	Expand the Island's green stormwater infrastructure by expanding rain gardens, stormwater planters, and other systems on City-owned property and explore enacting GSI requirements for new developments
Community Resilience	Increase community resilience to climate impacts.	CR1.3	Adaptation incentives	Offer rebates and incentives to encourage adaptation upgrades and the installation of low-emissions space-cooling devices on residential and commercial properties (e.g., cool roofs, green roofs, cool pavement, ceiling fans, air filters).
	Prepare infrastructure & services for climate change.	CR2.2	Vulnerability assessment	Conduct a vulnerability assessment to better understand Mercer Island's specific climate risks and identify vulnerable infrastructure.
Cross-Cutting & Municipal	Engage and support community climate action.	CC1.1	Climate outreach/education	Develop a climate outreach and education campaign or program to support ongoing community engagement in climate actions. Initiatives could include: <ul style="list-style-type: none"> - Climate challenges, competitions, and climate pledges aimed at inspiring friendly competition among residents and businesses. - Educational campaigns focused on addressing common misinformation related to home energy use and other everyday activities (e.g., the benefits of using cold v. hot water for laundry). - Resource sharing campaigns, such "renewable energy" or "energy efficiency" home tours in which neighbors to learn from each other on how to implement renewable energy or energy efficient upgrades in their homes.
		Reduce climate	CC2.1	City green building policy

Focus Area	Strategy	ID	Action Short Name	Action Description
	impact of municipal operations.	CC2.3	Environmentally Preferable Purchasing Policy	Develop and implement a municipal Environmental Preferable Purchasing Policy that prioritizes products with the lowest environmental impact. Policy will direct purchasing decisions within each department, including vehicle and fuel purchases and construction materials.
		CC2.6	Municipal renewable energy storage	Expand solar installation and build renewable energy storage systems on City property.
	Institutionalize climate considerations into City planning & decision-making.	CC3.1	Climate-informed City decision-making	Apply a "climate lens" to City decision-making and activities. Introduce a policy requirement the consideration of climate change & GHG implications of City policy options and decisions, including consideration of the social cost of carbon and equity implications in conducting policy cost-benefit analysis.
		CC3.2	GHG tracking & reporting	Maintain a publicly available online dashboard that tracks and reports on CAP and GHG reduction progress on an annual basis.

Responses to Sustainability Committee Rankings

In the following sections, we summarize trends in Sustainability Committee rankings by focus area, strategy, and wedge analysis “lever” and consultant recommendations for revision.

By Focus Area

Table 1 below shows the distribution of actions before committee rankings (“TOTAL” row), after committee rankings are applied (“B+ or Higher” row), and after Cascadia’s list refinement is applied (“CCG” row) as compared to the proposed focus areas in the Mercer Island Climate Action Plan.

Table 1. Action distribution, by focus area.

Focus Area	TOTAL	B+ or Higher	CCG
Buildings & Energy	12	5	7
Transportation	17	12	13
Consumption & Disposal	6	5	4
Natural Systems	6	0	3
Community Resilience	5	2	2
Cross-Cutting & Municipal	12	12	6
TOTAL	58	36	35

Using the current “B+ or higher” action selection criteria organized by **Strategy**, we observe the following trends:

- Buildings & Energy (B&E) actions are underrepresented.** Under the “B+ or higher” scenario, B&E has the same number of actions as Consumption & Disposal (C&D), yet B&E offers far greater and long-lasting potential to dramatically reduce GHG emissions if bold, foundational actions are taken (for example, steering City Code and construction practices towards an all-electric future). Ten of the 12 actions score at a 3 or higher (out of 5) for GHG reduction potential, compared to none of the C&D measures scoring that high. **We recommend including 2-4 additional actions for this focus area.**
- Natural Systems and Community Resilience measures are underrepresented.** Natural Systems does not offer significant GHG reduction potential, but does provide the opportunity to continue important carbon sequestration work and emphasize

the objectives of other City plans (e.g., PROS Plan). In addition, Community Resilience offers a number of low cost but moderate-to-high gain measures that could seamlessly build on existing City programs, or help prepare for an increasingly unpredictable climate. **We recommend including at least 2-3 actions within each of these focus areas.**

- Municipal-focused measures are overrepresented.** In contrast, while it's important to lead by example in internal City operations, the extremely small footprint of municipal activities compared to the community (just 1 or 2%) suggests that limited resources could be better spent elsewhere, and that the number of internal Cross-Cutting & Municipal GHG actions could be reduced. **We recommend limiting actions in this focus area to no more than the number of actions within the B&E and Transportation focus areas.**

By Strategy

Table 2 below shows the distribution of actions before committee rankings (“TOTAL” row), after committee rankings are applied (“B+ or Higher” row), and after Cascadia’s list refinement is applied (“CCG” row) as compared to the proposed strategies in the Mercer Island Climate Action Plan.

Table 2. Action distribution, by focus area/strategy.

Focus Area	Strategy	TOTAL	B+ or Higher	CCG
Buildings & Energy	Transition to non-fossil building energy.	8	3	5
Buildings & Energy	Reduce energy use in new and existing buildings.	4	2	2
Transportation	Reduce vehicle travel.	6	4	5
Transportation	Transition to cleaner vehicles & equipment.	8	7	6
Transportation	Reduce aviation emissions.	3	1	2
Consumption & Disposal	Reduce waste generation & landfill disposal.	2	1	2
Consumption & Disposal	Consume sustainably.	4	4	2
Natural Systems	Increase urban tree canopy and green space.	3	0	2
Natural Systems	Foster healthy & resilient natural systems.	3	0	1
Community Resilience	Increase community resilience to climate impacts.	2	0	1
Community Resilience	Prepare infrastructure & services for climate change.	3	2	1
Cross-Cutting & Municipal	Engage and support community climate action.	3	3	1
Cross-Cutting & Municipal	Reduce climate impact of municipal operations.	7	7	3
Cross-Cutting & Municipal	Institutionalize climate considerations into City planning & decision-making.	2	2	2

Using the current “B+ or higher” action selection criteria organized by **Strategy**, we observe the following trends:

- **Measures within the “Reduce climate impact of municipal operations” strategy are overrepresented.** As mentioned above, while it’s important to lead by example in internal City operations, the extremely small footprint of municipal activities compared to the community (just 1 or 2%) suggests that limited resources could be better spent elsewhere. **We recommend shifting up to 3 actions in this strategy to other less represented strategies.**
- **Measures within the “Transition to cleaner vehicles & equipment” strategy are overrepresented.** While transitioning to cleaner vehicles and equipment is important for achieving GHG emission reductions, the City has relatively less control over this strategy compared to strategies such as reducing vehicle travel (e.g., through land use), improving energy use in buildings (e.g., through building code), and increasing tree canopy and green space (e.g., through land use planning and ordinances). We recommend transitioning some measures within this strategy to other underrepresented strategies. **We recommend shifting 1-3 actions in this strategy to other less represented strategies.**
- **Measures within the “Consume sustainably” strategy are overrepresented.** While reducing consumption-based GHG emissions is an important consideration for a communitywide climate action plan, these emissions are not included as part of the city’s current communitywide GHG emissions inventory, and therefore reductions in this sector would not contribute toward the City meeting the K4C GHG emission reduction goals. **We recommend shifting 1-3 actions in this strategy to other less represented strategies.**
- **Measures within the “Increase urban tree canopy and green space,” “Foster healthy & resilient natural systems,” and “Increase community resilience to climate impacts” strategies are underrepresented.** While these strategies do not offer significant GHG emission reduction benefits, it is important to include a balance of both climate mitigation and adaptation measures within a communitywide climate action plan. This is because some degree of climate impacts are inevitable at this point, regardless of local or global GHG emission reduction efforts. These strategies also offer additional benefits to the community, such as recreation, aesthetic, and public health and safety benefits. **We recommend including at least one action for each of these strategies.**

By Wedge Analysis “Lever”

Table 3 below shows the distribution of actions before committee rankings (“TOTAL” row), after committee rankings are applied (“B+ or Higher” row), and after Cascadia’s list refinement is applied (“CCG” row) as compared to the “levers” presented in the PSREA wedge analysis for Mercer Island.

Table 3. Action distribution, by wedge analysis “lever.”

Wedge Analysis Lever	TOTAL	B+ or Higher	CCG Rec.
Electrify new buildings	1	1	1
Reduce energy use in existing buildings	6	2	4
Electrify existing buildings	5	1	2
Reduce passenger vehicle travel	6	4	5
Electrify passenger vehicles	6	5	4
Electrify freight/service vehicles	1	1	1
Decarbonize offroad equipment	1	1	1
Decarbonize aviation fuels	2	1	1
Reduce air travel & increase efficiency	1	0	1
Divert C&D materials	0	0	0
Divert other recyclable & compostable materials	4	3	3

Using the current “B+ or higher” action selection criteria organized by **Wedge analysis “lever,”** we observe the following trends:

- **Measures within the “Electrifying existing buildings” lever are underrepresented.** This lever only has one action under the “B+ or higher” scenario, yet this area wields a significant influence on the community’s overall GHG emissions due to the long lifespan of today’s building stock and the fossil energy they will consume well into the future. **We recommend including at least two actions for this lever.**
- **Measures within the “Reduce air travel & increase efficiency” lever are underrepresented.** While the bulk of control over this lever lies within more regional/federal jurisdictions, the relatively high proportion of communitywide emissions from air travel could warrant including at least one local action that addresses this lever. **We recommend including at least one action for this lever.**

Impact on Emission Reductions

The following tables and figures depict **forecasted emissions reductions** under the following scenarios:

- **Original target scenario:** Table 4 shows a projected pathway toward meeting the City’s 2030, 2040, and 2050 emission reduction targets; Figure 1 shows the corresponding wedge graphic for this pathway. This pathway shows the changes that would be needed for the City to achieve its stated GHG targets (as adopted by the City as a K4C member). This scenario was first presented to Council at its July 19, 2022, meeting.
- **B+ or higher scenario:** Table 5 and Figure 2 depict estimated emissions reductions achieved from the list of “B+ or higher” actions.
- **CCG scenario:** Table 6 and Figure 3 depicts estimated emissions reductions achieved from the compilation of Cascadia-recommended refined action list (assuming the number of actions is held to 35 total).

Table 4. Target scenario: projected pathway for the City to meet 2030, 2040, and 2050 emission reduction targets. **Note:** Targets for this scenario are based on K4C, PSRC, and other agency-published data.

Wedge lever	2030	2040	2050
Electrify new buildings (% fossil fuel use converted to elect.)	100%	100%	100%
Reduce energy use in existing buildings (% reduction in energy use)	25%	35%	45%
Electrify existing buildings (% fossil fuel use converted to elect.)	20%	50%	95%
Reduce passenger vehicle miles traveled (% reduction in VMT)	1%	2%	5%
Electrify passenger vehicles (% new vehicles sold that are EV)	65%	100%	100%
Electrify freight/service vehicles (% new vehicles sold that are EV)	50%	50%	100%
Decarbonize offroad equipment (% reduction in emissions)	25%	75%	95%
Decarbonize aviation fuels (% reduction in fuel carbon intensity)*	11%	40%	95%
Reduce air travel (% reduction in aviation fuel use)*	5%	10%	15%
Divert C&D materials (% of C&D waste diverted)	85%	85%	85%
Divert other recyclable and compostable materials (% reduction in waste to landfill)	5%	50%	95%

Figure 1. Target scenario: projected pathway for the City to meet its 2030, 2040, and 2050 emission reduction targets.

This scenario achieves a 50% reduction in GHG emissions by 2030 and a 95% reduction by 2050 (which is the City’s stated K4C Commitment).

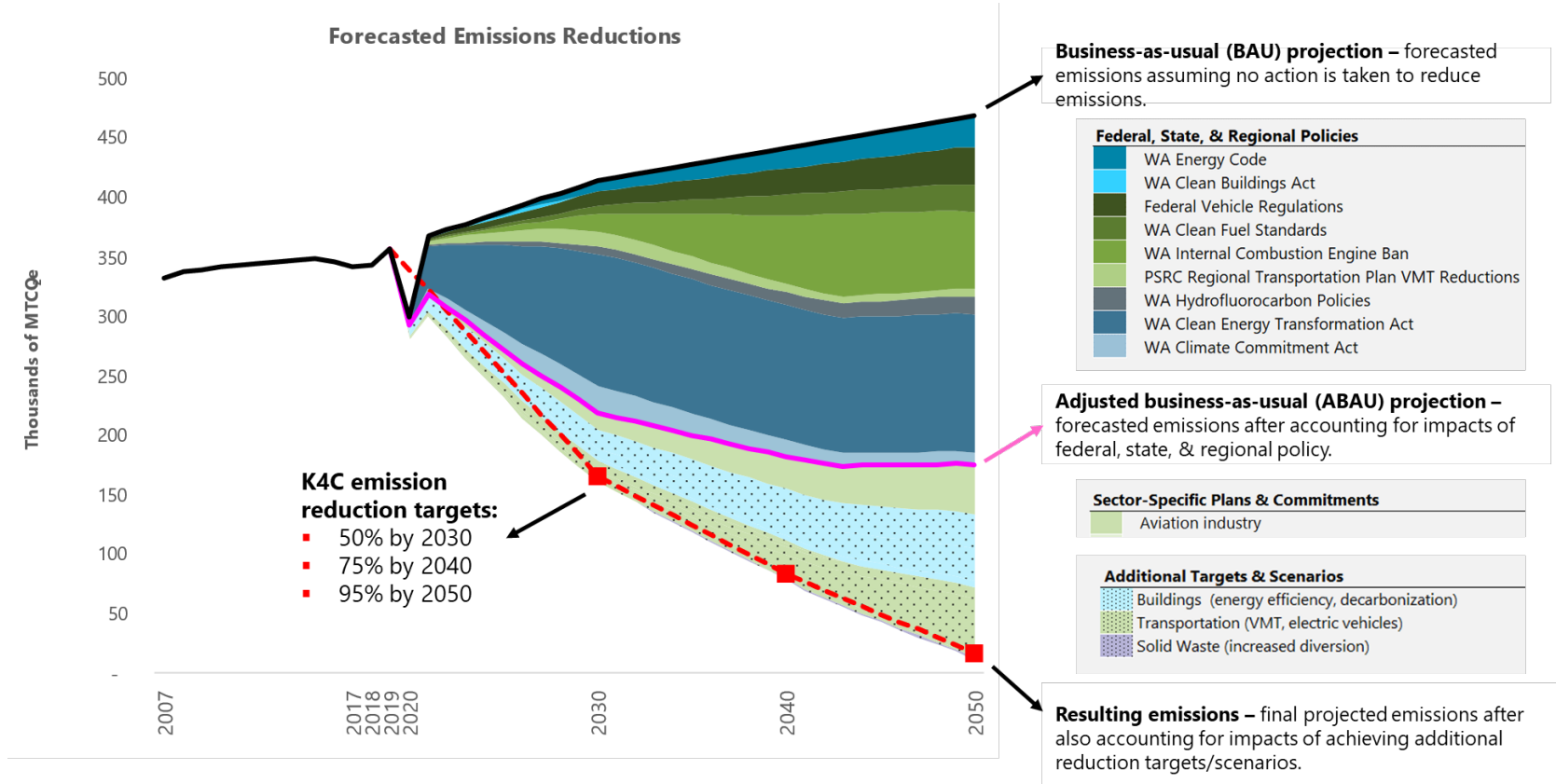


Table 5. B+ or higher scenario: estimated changes in emissions sources under the “B+ or higher” action list.

Note: The * notation indicates this scenario has no actions in the listed category

Wedge lever	2030	2040	2050
Electrify new buildings (% fossil fuel use converted to elect.)	100%	100%	100%
Reduce energy use in existing buildings (% reduction in energy use)	12%	17%	23%
Electrify existing buildings (% fossil fuel use converted to elect.)	10%	15%	35%
Reduce passenger vehicle miles traveled (% reduction in VMT)	1%	1%	2%
Electrify passenger vehicles (% new vehicles sold that are EV)	60%	95%	95%
Electrify freight/service vehicles (% new vehicles sold that are EV)	50%	50%	100%
Decarbonize offroad equipment (% reduction in emissions)	25%	75%	95%
Decarbonize aviation fuels (% reduction in fuel carbon intensity)	11%	21%	45%
Reduce air travel (% reduction in aviation fuel use) *	0%	0%	0%
Divert C&D materials (% of C&D waste diverted) *	0%	0%	0%
Divert other recyclable and compostable materials (% reduction in waste to landfill)	5%	40%	80%

Figure 2. B+ or higher scenario: estimated changes in emissions under the “B+ or higher” action list.

This scenario achieves a 44% reduction in GHG emissions by 2030 (vs the 50% target) and a 77% reduction by 2050 (vs the 95% target).

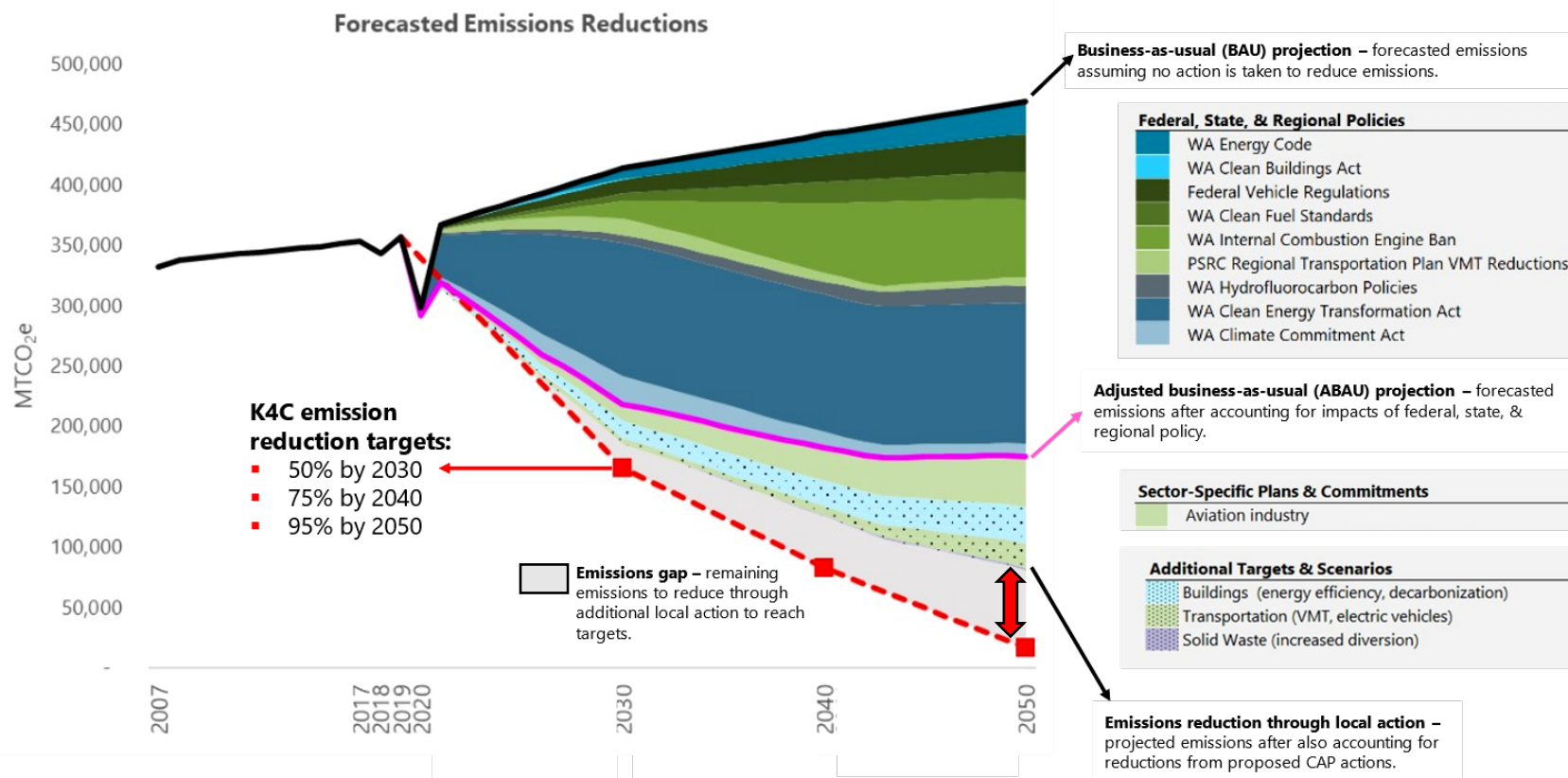


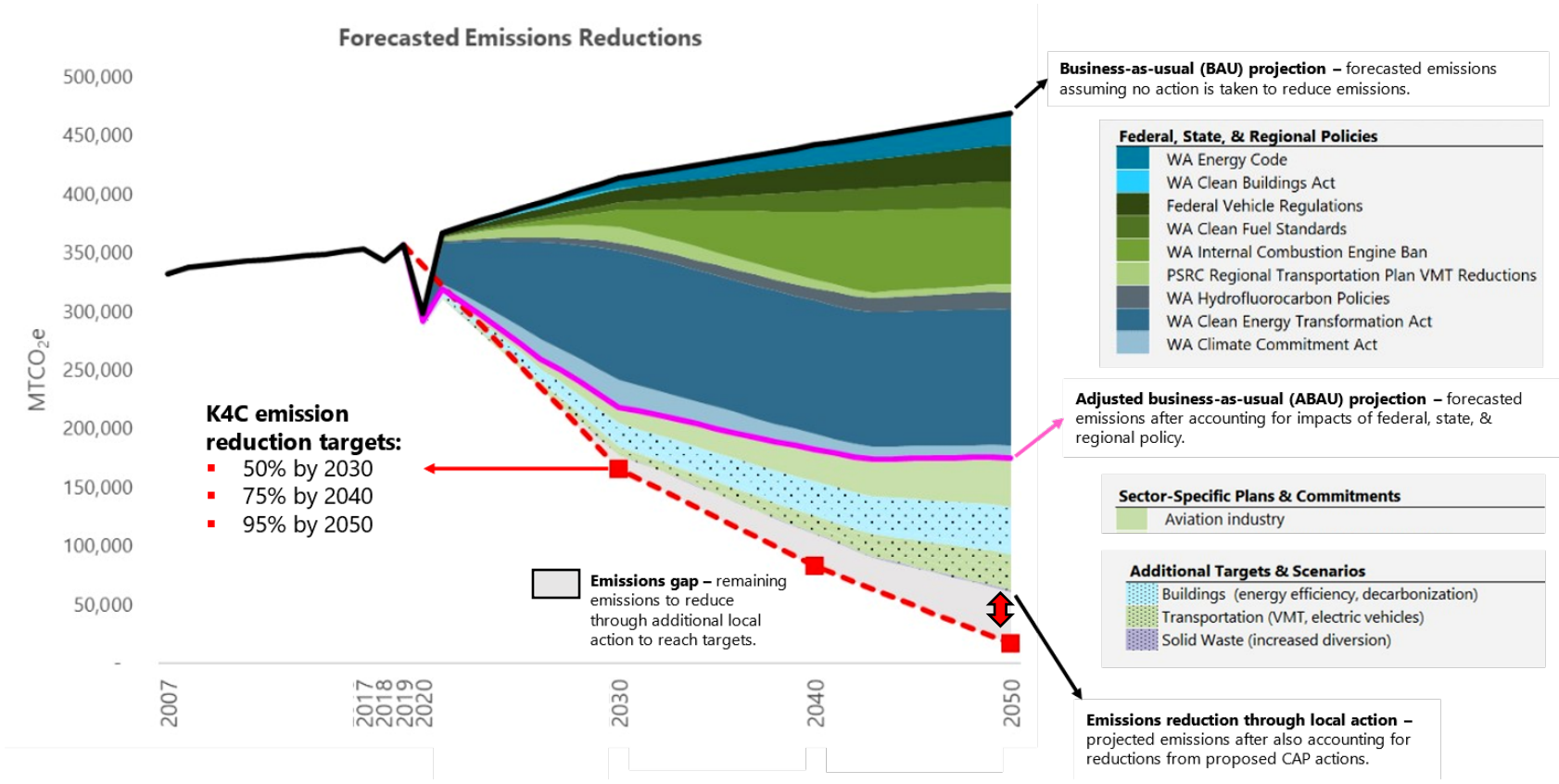
Table 6. CCG scenario: projected changes in emissions sources under the Cascadia-recommended refined action list.

Note: The * notation indicates this scenario has no actions in the listed category

Wedge lever	2030	2040	2050
Electrify new buildings (% fossil fuel use converted to elect.)	100%	100%	100%
Reduce energy use in existing buildings (% reduction in energy use)	20%	25%	30%
Electrify existing buildings (% fossil fuel use converted to elect.)	10%	20%	40%
Reduce passenger vehicle miles traveled (% reduction in VMT)	1%	1%	2%
Electrify passenger vehicles (% new vehicles sold that are EV)	55%	90%	90%
Electrify freight/service vehicles (% new vehicles sold that are EV)	50%	50%	100%
Decarbonize offroad equipment (% reduction in emissions)	25%	75%	95%
Decarbonize aviation fuels (% reduction in fuel carbon intensity)	11%	21%	45%
Reduce air travel (% reduction in aviation fuel use)	5%	10%	15%
Divert C&D materials (% of C&D waste diverted) *	0%	0%	0%
Divert other recyclable and compostable materials (% reduction in waste to landfill)	5%	40%	80%

Figure 3. CCG scenario: estimated changes in emissions under the Cascadia refined action list.

This scenario achieves a 46% reduction in GHG emissions by 2030 (vs the 50% target) and a 80% reduction by 2050 (vs the 95% target).



Summary of items ranked below B+ but recommended by Cascadia for reinsertion (if the City holds to 35 total GHG and resiliency actions)

- **BE 1.3** Heat pump rebates and education
- **BE 1.6** Expand solar energy storage and grid resiliency
- **BE 1.8** Contractor incentive and training program
- **BE 2.2** State building code enforcement
- **TR 1.2** EV charging incentives and rebates
- **TR 2.1** TOD and TDM policy for new/redevelopment
- **TR 3.3** Air travel alternatives
- **CD 1.2** Mandatory composting/recycling
- **NS 1.1** Tree preservation ordinance
- **NS 1.2** Tree planting incentive program
- **NS 2.3** Green stormwater infrastructure
- **CR 2.2** Vulnerability assessment

Summary of items ranked B+ or higher but recommended by Cascadia for removal (if the City holds to 35 total GHG and resiliency actions)

Some of these actions can be combined with other actions; or could/will remain as ongoing City campaigns with environmental or sustainability goals other than just GHG reduction; or may be actions that King County or the K4C is already undertaking.

- **BE 1.5** Solar panel expansion
- **BE 2.4** Built Green and LEED-certified buildings
- **TR 1.5** EV education and outreach
- **TR 1.6** State vehicle policy advocacy
- **CD 2.1** Expand repair/reuse programs
- **CD 2.3** Low carbon building materials
- **CR 2.1** Heat/air shelters
- **CC 1.2** Climate advocacy and partnerships
- **CC 1.3** Low carbon school and businesses
- **CC 2.2** Commute Trip Reduction participation and incentives
- **CC 2.4** Municipal energy retrofits
- **CC 2.5** Municipal fleet electrification
- **CC 2.7** Alternative commuting incentives