



Draft Resiliency Plan Actions & Multi-Criteria Analysis Results

Introduction

This document presents the Port Angeles Resiliency Plan draft actions list and multi-criteria analysis results. To generate the actions list:

1. Cascadia developed an **initial actions list** based on the Climate Action Planning Group (CAPG) 2019 Climate Resiliency Recommendations, City documents, and consultant experience.
2. CAPG reviewed, refined, and added to the initial actions list in their Nov. 2021 workshop.
3. The general public provided input, including new action ideas, through a workshop in Nov. 2021.
4. Cascadia reviewed the list of ~120 actions generated through CAPG and public workshops. We grouped similar actions together to improve implementation potential and clarify how the City plans to pursue resiliency to generate the list of **71 draft actions** included in this document.

To determine which actions would be evaluated through the multi-criteria analysis, **CAPG completed a survey to prioritize actions for analysis**. Based largely on survey results, but also considering a balance of action types, sectors, and City and community priorities, Cascadia selected **40 actions for multi-criteria analysis**. Actions that were not assessed can still be included in the Resiliency Plan. More information on the analysis and results is provided herein.

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Multi-Criteria Analysis Results

The Cascadia team and City conducted a **qualitative** multi-criteria analysis (MCA: a scoring system that which ranks actions against a set of **decision criteria**) to evaluate 40 of 71 of the Resiliency Plan draft actions. Through a survey, CAPG helped identify which actions to evaluate. CAPG and City representatives from Planning Commission, City Council, and City government vetted the criteria, criteria definitions, and their weights. For each action evaluated, the evaluation team assigned numeric rankings of 1 to 5 based on how well the action aligned with each criterion. We used a **weighted summation** to arrive at an overall priority score for each action. Our analysis considers top-scoring actions (overall, by strategy, and by sector) and qualitative themes observable from scoring trends.

Criterion	Weight	Interpreting Scores				
		1	2	3	4	5
Impact: Relative potential to reduce greenhouse gas emissions ¹ AND relative potential to increase adaptive capacity/resilience.	25%	Very low impact	Low impact	Moderate impact	High impact	Very high impact
Cost: Relative costs to the City and community; costs of inaction	20%	Very high costs; Very low costs of inaction	High costs; Low costs of inaction	Moderate costs; Moderate costs of inaction	Low costs; High costs of inaction	Very low costs; Very high costs of inaction
Equity: Relative ability to reduce vulnerability, especially among overburdened communities; whether costs and benefits are distributed equitably; whether historic inequities are addressed	20%	High potential to create inequitable outcomes	Some potential to create inequitable outcomes	Likely to have neutral impact	Some potential to generate equitable outcomes	High potential to generate equitable outcomes
Feasibility: Relative level of City control; relative level of regulatory, political, or technological constraints; adaptability to new technologies; alignment with existing policies, plans, and programs	15%	Very low City control; Unviable due to constraints	Low City control; Difficult to implement	Moderate City control; Moderately difficult to implement	High City control; Relatively easy to implement	Very high City control; Easy to implement
Community support: Relative level of support from residents, stakeholders, and other non-government implementing partners	10%	Most strongly oppose	Some strongly oppose	Mixed/neutral support	Some strongly support	Most strongly support
Co-benefits: Relative potential for an action to lead to additional beneficial outcomes, especially public health, a greener economy (focused on the City’s most promising green sectors), and healthy natural systems (especially salmon, kelp, seagrasses, and their habitats)	10%	No to Very Low co-benefits	Indirect, short-term, small-scale co-benefits	Direct co-benefits, but short- to mid-term and/or moderate scale	Significant, direct co-benefits over longer-term and/or larger scale	Significant, direct, long-term, large-scale co-benefits

¹ Potential to reduce GHG emissions is based on the results of the City’s GHG emissions inventory. Potential to reduce climate risk and build resilience is based on the results of regional climate studies, demographics, and local expert knowledge.



Findings & Recommendations

We report **five key findings** from the MCA:

1. Evaluated actions **overall scored well**, but improvements on specific criteria would strengthen the Resiliency Plan. See [Overall Results](#) for a list of all actions organized by their priority score.
2. Transportation and Community Resilience & Wellbeing actions **scored significantly higher** than other sectors.
3. The **highest-priority actions tend to both build resilience and reduce emissions**, or address existing high-priority community concerns. See [Highest-Priority Actions](#) for a list of these actions.
4. Baseline assessments and climate-smart financing did not score highly overall, but **are critical to build resilience**.
5. Actions that are **significantly outside of the City’s control scored the lowest overall**.

Lists of the [Top Actions by Strategy](#) and [Top Actions by Sector](#) are also provided.

Finding 1. Evaluated actions overall scored well, but improvements on specific criteria would strengthen the Resiliency Plan.

The table below summarizes the themes and recommendations for this finding.

Themes	Recommendation(s)
<ul style="list-style-type: none"> ▶ Actions selected for evaluation overall scored moderate to high. Relatively few actions scored below a 3. ▶ This suggests the selected actions are balanced in terms of benefits and tradeoffs. 	<ul style="list-style-type: none"> ▶ Use higher scoring actions as guidance to evaluate and improve actions that were not evaluated.
<ul style="list-style-type: none"> ▶ Impact scored low to moderate in about half of actions evaluated: <ul style="list-style-type: none"> ○ Sixty-three percent (63%) of actions have impact scores below 3.0. Of these 25 actions, seven are in the Buildings & Energy and Consumption & Waste sectors, which are low-emissions sectors in Port Angeles. Ten actions are either foundational baseline assessments (see Finding 4) or Ecosystem Health actions that are necessary and likely 	<ul style="list-style-type: none"> ▶ The lower impact scores reflect a focus in the actions list on baseline assessments, thoroughness in linking the Resiliency Plan to broader ecosystem health and community concerns,² and having high-impact approaches lumped into fewer actions.³ ▶ City Councilmembers asked for information on whether the Resiliency Plan, in its entirety, is likely to result in reaching carbon neutrality by 2030. Cascadia is able to provide a qualitative response, based on our experience with quantitative assessments for other jurisdictions.

² This trend is most common for Ecosystem Health actions that have a less direct link to community resilience or emissions reduction (e.g., wildlife corridors, critical area protection). These actions tend to score well across all other criteria due to their strong co-benefits, popularity, and feasibility.

³ Having high-impact approaches lumped into fewer actions is an artifact of the action development process. Unless there is a reason to split up actions to improve implementation potential, there is no issue (from a technical perspective).



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Themes	Recommendation(s)
<p>to continue under other programs. Three actions have high scores in other criteria and are among the highest-priority actions identified through the MCA.</p>	<ul style="list-style-type: none"> ▶ Overall, the Resiliency Plan actions are focusing on the key actions Port Angeles will need to take to build resilience and achieve carbon neutrality by 2030. However, actions may need to be implemented faster or at a broader scale, and there are gaps to fill. It will also be important to move beyond both infrastructure risk analysis and vulnerability assessments into action, and to have a plan to do so quickly. <ul style="list-style-type: none"> ○ Implement faster / more broadly: Actions that focus on transportation infrastructure, equity, and safety, including electrification of transit vehicles will need to be implemented quickly and comprehensively to achieve carbon neutrality by 2030. Also, energy supply should be 100% carbon-free by 2030. ○ Fill key gaps: Recognizing the transportation focus in Port Angeles is transit, non-motorized travel, and small e-mobility, these actions should be paired with programs to aggressively and quickly reduce barriers to and incentivize new or used zero-emissions vehicle (ZEV) ownership for those who need to drive. Actions focused on the circular economy (including waste diversion) and supply chain resiliency also need greater detail and integration to both reduce consumption-based emissions and build a more local, resilient supply chain. To improve the circular economy actions, we recommend a follow-on project to focus on these needs. ○ Plan for infrastructure design & construction now: The major infrastructure improvements that Port Angeles will likely need are going to take many years to design and build. To reduce City and community risk and cost, begin planning and trying to secure funding now for infrastructure design and construction.
<ul style="list-style-type: none"> ▶ Equity scored low to moderate in about half of actions evaluated: <ul style="list-style-type: none"> ○ Forty percent (40%) of actions have equity scores of 2.5 or 3.0. 	<ul style="list-style-type: none"> ▶ Since “3.0” is a neutral score, these actions should be evaluated for ways to reduce climate-related risks and build resiliency within overburdened communities.
<ul style="list-style-type: none"> ▶ Support for healthy natural systems scored low to moderate in about half of actions evaluated: <ul style="list-style-type: none"> ○ While co-benefits overall were scored at least moderately, 55% of actions have scores below 3.0 for “support for healthy natural systems.” This sub-criterion 	<ul style="list-style-type: none"> ▶ Actions that will occur near salmon, kelp, and seagrass habitat or otherwise affect these species should be re-evaluated to improve performance on this sub-criterion.



Themes	Recommendation(s)
is focused on salmon, kelp, seagrasses, and their habitats.	
▶ Many actions lacked sufficient detail to confidently assess community cost and/or community support.	▶ Closely review these criteria scores to identify and correct major discrepancies in assessing community cost and/or community support.

Finding 2. Transportation and Community Resilience & Wellbeing actions scored significantly higher than other sectors.

The table below summarizes the themes and recommendations for this finding.

Themes	Recommendation(s)
<ul style="list-style-type: none"> ▶ Ninety percent (90%) of Transportation actions are in the top 20 scores. Sixty-seven percent (67%) of Community Resilience & Wellbeing actions are in the top 20 scores. These trends are aligned with stated community priorities. ▶ About one-third of actions in Ecosystem Health and Buildings & Energy are in the top 20 scores. The distinction is likely due to the higher-scoring actions having both resilience building and emissions reducing benefits (see Finding 3). In general, due to the low emissions from Port Angeles’s energy sources, Buildings & Energy actions are overall lower impact and therefore tend to score lower overall. ▶ Fifty percent (50%) of Consumption & Waste actions are in the top 20 scores. The higher-scoring actions either have a significantly larger scope than the other actions in the sector (City and community sustainable purchasing) or have an above-average co-benefits score for the type of action (wastewater facility GHG study). 	<ul style="list-style-type: none"> ▶ <i>None. This is an observational finding.</i>

Finding 3. The highest-priority actions tend to both build resilience and reduce emissions, or address existing high-priority community concerns.

The table below summarizes the themes and recommendations for this finding.

Themes	Recommendation(s)
<ul style="list-style-type: none"> ▶ Actions that ranked highly overall, within their strategy, and within their sector both build resilience and reduce emissions. These are: <ul style="list-style-type: none"> ○ Forest and marine habitat preservation ○ Urban tree canopy, parks, and open space ○ Community renewable energy grid 	<ul style="list-style-type: none"> ▶ Prioritize these actions for implementation.
<ul style="list-style-type: none"> ▶ Actions that ranked highly overall, within their strategy, and within their sector address existing high-priority community concerns. These are: <ul style="list-style-type: none"> ○ Housing Action Plan implementation ○ Climate migration policy ○ Climate resilience & emergency planning ○ Transit infrastructure, equity, & safety 	<ul style="list-style-type: none"> ▶ Prioritize these actions for implementation.

Finding 4. Baseline assessments and climate-smart financing did not score highly overall, but are critical to build resilience.

The table below summarizes the themes and recommendations for this finding.

Themes	Recommendation(s)
<ul style="list-style-type: none"> ▶ As is common, baseline assessments, evaluations, and some policy changes scored lower than more directly impactful actions. 	<ul style="list-style-type: none"> ▶ These actions are fundamental for resilience building and should continue to be prioritized. In particular: <ul style="list-style-type: none"> ○ SLR vulnerability assessment ○ Hazard Mitigation Plan implementation ○ Shoreline Master Program updates ○ Critical area protection ○ Transportation vulnerability
<ul style="list-style-type: none"> ▶ “Climate-smart finance policies” scored moderately, yet building resilience will require dedicated and smart investment. 	<ul style="list-style-type: none"> ▶ The City should still devote time and resources to permanently funding the Resiliency Plan.

Finding 5. Actions that are significantly outside of the City’s control scored the lowest overall.

The table below summarizes the themes and recommendations for this finding.



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Themes	Recommendation(s)
<ul style="list-style-type: none"> ▶ Of the five actions with the lowest scores, three are significantly outside of the City’s control. They are: <ul style="list-style-type: none"> ○ Extension of timber harvest rotation ○ BPA renewal agreement ○ Flood vulnerability and risk (i.e., FEMA flood map updates) 	<ul style="list-style-type: none"> ▶ Consider refocusing “extension of timber harvest rotation” on small-holder climate-friendly forestry, which was identified as a promising green economy sector for Port Angeles. ▶ Consider deprioritizing the remaining two actions, at least for early implementation. BPA’s power grid will get cleaner over time due to state law; in the meantime, the high-scoring “community renewable energy grid” can generate both the greener energy and grid resilience the community seeks. Regarding updating FEMA flood maps, there may be other options to acquire the data needed from more available partners. ▶ Review the unevaluated actions to identify those that are significantly outside of the City’s control and consider deprioritizing them, unless other factors (e.g., high impact, high equity benefit) outweigh the City’s lack of control.



Highest-Priority Actions

The Cascadia team considered actions with a compiled score of 3.6 or greater, the 2-3 top actions in each sector, and the 1-2 top actions in each strategy. Actions in two or more of these categories were identified as the highest-priority actions to pursue *of those evaluated with the MCA*. **Unevaluated actions with similar characteristics to the highest-priority actions should also be considered for prioritization.**

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score	Rationale
Increase community adaptive capacity	116	Housing Action Plan implementation	3.33	3.67	4.00	4.50	5.00	3.67	4.0	>3.6 Sector Strategy
Increase community adaptive capacity	36	Climate migration policy	3.67	4.67	3.50	3.00	4.00	3.33	3.8	>3.6 Sector Strategy
Prepare for extreme events	86	Climate resilience & emergency planning	2.33	4.67	4.50	4.00	4.00	3.33	3.7	>3.6 Sector Strategy
Increase opportunities for carbon sequestration and storage	114	Forest and marine habitat preservation	5.00	3.33	2.50	4.50	4.00	4.00	3.9	>3.6 Sector Strategy
Restore and protect natural habitat	9	Urban tree canopy, parks, and open space	2.33	3.67	5.00	4.00	3.50	4.00	3.6	>3.6 Sector Strategy
Restore and protect natural habitat	37	Coastal erosion reduction	3.33	3.33	4.50	3.00	3.00	3.33	3.4	Sector Strategy
Decrease transportation GHG emissions	1	Transit infrastructure, equity, & safety	3.67	3.00	3.50	3.00	5.00	3.33	3.7	>3.6 Sector Strategy
Decrease transportation GHG emissions	30	Increase EV use for general public	3.67	4.33	4.50	3.00	3.00	2.33	3.6	>3.6 Sector



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score	Rationale
Increase resiliency of energy systems	2	Community renewable energy grid	3.67	2.67	3.50	3.00	5.00	3.67	3.6	>3.6 Sector Strategy
Reduce vulnerability	64	Retrofit buildings for vulnerability	3.33	3.00	4.00	4.00	3.50	3.33	3.5	Sector Strategy
Mitigate energy-related GHG emissions	83	EV parking requirements	3.67	2.67	3.50	2.00	4.50	3.33	3.4	Sector Strategy
Promote sustainable consumption	7	City and community sustainable purchasing	4.00	3.33	5.00	3.50	3.00	3.00	3.7	>3.6 Sector Strategy
Decrease waste-related GHG emissions	19	Wastewater facility GHG	2.33	5.00	5.00	3.50	3.00	3.67	3.7	>3.6 Sector Strategy



Overall Results

Actions are listed from the highest priority score to the lowest priority score. Where scores are the same, the order of actions is random and does not indicate a priority order.

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Increase community adaptive capacity	116	Housing Action Plan implementation	3.33	3.67	4.00	4.50	5.00	3.67	4.0
Increase opportunities for carbon sequestration and storage	114	Forest and marine habitat preservation	5.00	3.33	2.50	4.50	4.00	4.00	3.9
Increase community adaptive capacity	36	Climate migration policy	3.67	4.67	3.50	3.00	4.00	3.33	3.8
Prepare for extreme events	86	Climate resilience & emergency planning	2.33	4.67	4.50	4.00	4.00	3.33	3.7
Promote sustainable consumption	7	City and community sustainable purchasing	4.00	3.33	5.00	3.50	3.00	3.00	3.7
Decrease waste-related GHG emissions	19	Wastewater facility GHG	2.33	5.00	5.00	3.50	3.00	3.67	3.7
Decrease transportation GHG emissions	1	Transit infrastructure, equity, & safety	3.67	3.00	3.50	3.00	5.00	3.33	3.7
Increase resiliency of energy systems	2	Community renewable energy grid	3.67	2.67	3.50	3.00	5.00	3.67	3.6
Increase community adaptive capacity	119	Comprehensive climate outreach & education	2.00	4.33	4.00	3.00	5.00	3.33	3.6
Restore and protect natural habitat	9	Urban tree canopy, parks, and open space	2.33	3.67	5.00	4.00	3.50	4.00	3.6



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Decrease transportation GHG emissions	30	Increase EV use for general public	3.67	4.33	4.50	3.00	3.00	2.33	3.6
Reduce vulnerability	64	Retrofit buildings for vulnerability	3.33	3.00	4.00	4.00	3.50	3.33	3.5
Increase community adaptive capacity	17	SLR vulnerability assessment	2.67	4.33	4.50	4.00	3.00	3.33	3.5
Increase community adaptive capacity	59	Water supply monitoring & enhancement	2.67	3.33	3.50	4.00	4.50	3.33	3.5
Mitigate energy-related GHG emissions	83	EV parking requirements	3.67	2.67	3.50	2.00	4.50	3.33	3.4
Increase community adaptive capacity	13	Sustainable agriculture	3.00	2.67	4.00	5.00	3.50	3.33	3.4
Prepare for extreme events	14	Wildfire urban interface	2.67	3.67	5.00	3.00	3.50	2.67	3.4
Restore and protect natural habitat	37	Coastal erosion reduction	3.33	3.33	4.50	3.00	3.00	3.33	3.4
Decrease transportation GHG emissions	31	Biking and walking infrastructure	3.33	2.67	4.00	5.00	3.00	3.00	3.4
Decrease transportation GHG emissions	32	Municipal fleet electrification & idle reduction	2.67	3.33	2.50	4.00	5.00	3.00	3.4
Reduce vulnerability	48	Climate-smart finance policies	3.33	3.00	3.50	3.50	3.50	3.00	3.3
Increase community adaptive capacity	115	Hazard Mitigation Plan implementation	2.00	3.33	3.50	4.00	4.00	4.00	3.3
Increase community adaptive capacity	45	City asset vulnerability	2.00	4.00	4.50	4.00	3.50	2.33	3.3



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Promote sustainable consumption	20	Commercial food waste diversion programs	2.33	2.67	4.50	4.00	4.00	3.33	3.3
Promote sustainable consumption	21	Residential food waste diversion programs	2.00	3.67	5.00	4.00	3.00	2.67	3.3
Restore and protect natural habitat	24	Shoreline Master Program updates	2.33	4.33	3.50	4.00	3.00	3.00	3.3
Restore and protect natural habitat	26	Harmful algal bloom monitoring	2.67	4.00	4.50	4.00	3.00	2.00	3.3
Increase transportation resiliency	35	Transportation vulnerability	2.33	3.67	3.50	4.50	3.50	3.33	3.3
Mitigate energy-related GHG emissions	4	Energy efficient home heating sources	2.67	2.33	4.50	3.00	4.50	2.33	3.2
Restore and protect natural habitat	25	Critical area protection	2.33	4.00	3.50	4.00	3.00	3.00	3.2
Mitigate energy-related GHG emissions	3	Energy efficiency retrofits	2.67	2.33	4.50	3.00	4.00	2.33	3.1
Mitigate energy-related GHG emissions	10	Net metering monitoring	2.33	3.33	4.50	4.00	3.00	2.00	3.1
Restore and protect natural habitat	51	Wildlife corridors	2.33	2.67	4.50	4.00	3.50	2.33	3.1
Mitigate energy-related GHG emissions	11	Green Building standards	2.67	3.00	4.00	2.00	3.00	3.67	3.0
Restore and protect natural habitat	27	Salmon habitat protection	2.33	3.33	3.00	4.00	3.00	2.67	3.0
Increase carbon sequestration potential	28	Extension of timber harvest rotation	3.00	3.33	3.00	3.00	3.00	2.67	3.0



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Mitigate energy-related GHG emissions	5	BPA renewal agreement	2.33	2.00	3.00	3.00	4.00	3.33	2.9
Prepare for extreme events	47	Flood vulnerability and risk	2.00	4.33	2.50	4.00	3.50	1.00	2.9
Increase community adaptive capacity	8	City price on carbon	3.33	2.67	3.50	2.00	2.00	3.00	2.8
Restore and protect natural habitat	49	Native plant landscaping	1.67	2.33	4.50	3.00	3.00	2.67	2.7



Top Actions by Strategy

The top 1-2 actions in each strategy are shown below. Buildings & Energy includes three strategies; all other sectors include two strategies. One action per strategy is typically included. However, for Community Resilience & Wellbeing and Ecosystem Health (12 and 10 actions, respectively), we chose the top action from each strategy and the third-highest scoring action from either strategy.

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Increase community adaptive capacity	116	Housing Action Plan implementation	3.33	3.67	4.00	4.50	5.00	3.67	4.0
Increase community adaptive capacity	36	Climate migration policy	3.67	4.67	3.50	3.00	4.00	3.33	3.8
Prepare for extreme events	86	Climate resilience & emergency planning	2.33	4.67	4.50	4.00	4.00	3.33	3.7
Increase opportunities for carbon sequestration and storage	114	Forest and marine habitat preservation	5.00	3.33	2.50	4.50	4.00	4.00	3.9
Restore and protect natural habitat	9	Urban tree canopy, parks, and open space	2.33	3.67	5.00	4.00	3.50	4.00	3.6
Restore and protect natural habitat	37	Coastal erosion reduction	3.33	3.33	4.50	3.00	3.00	3.33	3.4
Decrease transportation GHG emissions	1	Transit infrastructure, equity, & safety	3.67	3.00	3.50	3.00	5.00	3.33	3.7
Increase transportation resiliency	35	Transportation vulnerability	2.33	3.67	3.50	4.50	3.50	3.33	3.3
Increase resiliency of energy systems	2	Community renewable energy grid	3.67	2.67	3.50	3.00	5.00	3.67	3.6
Reduce vulnerability	64	Retrofit buildings for vulnerability	3.33	3.00	4.00	4.00	3.50	3.33	3.5



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Mitigate energy-related GHG emissions	83	EV parking requirements	3.67	2.67	3.50	2.00	4.50	3.33	3.4
Promote sustainable consumption	7	City and community sustainable purchasing	4.00	3.33	5.00	3.50	3.00	3.00	3.7
Decrease waste-related GHG emissions	19	Wastewater facility GHG	2.33	5.00	5.00	3.50	3.00	3.67	3.7



Top Actions by Sector

The top 2-3 actions in each sector are shown below. Since we evaluated five or fewer actions each in the Transportation and Consumption & Waste sectors, the top 2 actions are shown below. All other sectors include the top 3 actions.

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Increase community adaptive capacity	116	Housing Action Plan implementation	3.33	3.67	4.00	4.50	5.00	3.67	4.0
Increase community adaptive capacity	36	Climate migration policy	3.67	4.67	3.50	3.00	4.00	3.33	3.8
Prepare for extreme events	86	Climate resilience & emergency planning	2.33	4.67	4.50	4.00	4.00	3.33	3.7
Increase opportunities for carbon sequestration and storage	114	Forest and marine habitat preservation	5.00	3.33	2.50	4.50	4.00	4.00	3.9
Restore and protect natural habitat	9	Urban tree canopy, parks, and open space	2.33	3.67	5.00	4.00	3.50	4.00	3.6
Restore and protect natural habitat	37	Coastal erosion reduction	3.33	3.33	4.50	3.00	3.00	3.33	3.4
Decrease transportation GHG emissions	1	Transit infrastructure, equity, & safety	3.67	3.00	3.50	3.00	5.00	3.33	3.7
Decrease transportation GHG emissions	30	Increase EV use for general public	3.67	4.33	4.50	3.00	3.00	2.33	3.6
Increase resiliency of energy systems	2	Community renewable energy grid	3.67	2.67	3.50	3.00	5.00	3.67	3.6
Reduce vulnerability	64	Retrofit buildings for vulnerability	3.33	3.00	4.00	4.00	3.50	3.33	3.5



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Mitigate energy-related GHG emissions	83	EV parking requirements	3.67	2.67	3.50	2.00	4.50	3.33	3.4
Promote sustainable consumption	7	City and community sustainable purchasing	4.00	3.33	5.00	3.50	3.00	3.00	3.7
Decrease waste-related GHG emissions	19	Wastewater facility GHG	2.33	5.00	5.00	3.50	3.00	3.67	3.7

Draft Actions

This section presents actions in two sub-sections:

- ▶ Actions that were not evaluated through the MCA
- ▶ Actions evaluated through the multi-criteria analysis (MCA) – these are copied here and organized by sector to reduce the need to scroll during discussion. They results are the same as those reported in [Multi-Criteria Analysis Results](#).

Actions not evaluated through the MCA

Yellow highlights indicate an action that CAPG endorses for inclusion.

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Include in Plan?	Why Excluded from MCA?	Implications of MCA Results
Increase community adaptive capacity	121	Water regulations		Focus on groundwater and aquifer recharge, water efficiency, water storage and reclaim, and stormwater retention.	Likely to score moderate to high as regulatory/infrastructure action (higher impact) that addresses moderate resilience need, equity & co-benefits benefits
Increase community adaptive capacity	62	Community Rating System	Yes – can save PA money too. And Vuln reduction elements	City to participate in FEMA’s CRS.	Likely to score low-moderate due to lower impact and moderate on other criteria
Increase community adaptive capacity	122	Local groundwater strategy	No	Was likely to be a lower priority assessment action than other assessments (e.g., SLR vulnerability)	Likely to score low-moderate due to lower impact with moderate other benefits and low costs. May be needed for “water regulations” action to be more effective.
Increase community adaptive capacity	120	Community-based accountability	Yes – but maybe lump into education part of	Implementation of this should be led by others, not City.	As outreach action, likely to perform similar to “comprehensive climate education and outreach.”

Strategy	Action #	Action Short Name	Include in Plan?	Why Excluded from MCA?	Implications of MCA Results
			other ECO actions.		
Increase community adaptive capacity	84	Comprehensive Plan priorities		Climate Resiliency Plan already going to be part of Comprehensive Plan. Intending to meet requirement of HB 1099 already.	Likely to score low-moderate due to lower impact (policy action), moderate other benefits, and low costs
Increase community adaptive capacity	85	County-City coordination	Yes	Need to be specific which actions need cross-jurisdictional coordination.	Likely to score moderate due to lower impact, moderate-high other benefits, and low costs.
Increase community adaptive capacity	87	City volunteer coordinator		Desire to hire an actual staff member to hire volunteers, not just a volunteer to coordinate volunteers.	Likely to score low-moderate due to lower impact, moderate other benefits, and higher City costs.
Prepare for extreme events	88	Climate resiliency hubs		Synergies with hazard mitigation and emergency preparedness.	Likely to score high due to high impact and other benefits, and low costs.
Increase community adaptive capacity	89	Housing access and coordination		Already a known City and community priority.	Likely to score moderate . Needs to link to Housing Action Plan implementation more strongly.
Restore and protect natural habitat	50	Submerged habitat monitoring		Would need to work with DNR and County to implement.	Likely to perform similarly to similar Ecosystem Health actions in the bottom 20 of MCA results (e.g., wildlife corridors).
Restore and protect natural habitat	53	Climate sensitive tree species		USGS and USFS leading.	Likely to perform similarly to similar Ecosystem Health actions in the bottom 20 of MCA results (e.g., wildlife corridors). Would it make sense to include the riparian areas called out in this action be included in the “Urban tree canopy, parks, and open space” action?
Restore and protect natural habitat	54	Culvert replacement		State/Federal responsibility.	Likely to perform similarly to similar Ecosystem Health actions in the bottom 20 of MCA results (e.g., critical area protection). May score a bit higher due to benefits to salmon.



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Strategy	Action #	Action Short Name	Include in Plan?	Why Excluded from MCA?	Implications of MCA Results
Restore and protect natural habitat	55	Land-based pollutant reduction		State/Federal responsibility.	Likely to perform similar to “coastal erosion reduction.” Score may be slightly higher due to benefits to marine habitat.
Restore and protect natural habitat	117	Capital Facilities Plan implementation		Already prioritized by City.	Likely to perform similarly to “Hazard Mitigation Plan implementation”
Address sea level rise	118	Resilience of clean-up sites		Long-term action.	Likely to perform similarly or higher than “wastewater facility GHG” study.
Address sea level rise	97	CBA of armor repair		Will help assess implementation cost of on-the-ground actions.	Likely to perform similarly to other coastal baseline assessments. May be slightly higher due to Ediz Hook focus area.
Address sea level rise	104	Boat launch repair		Trade-off: defend low-lying infrastructure, retrofit it, or move it?	Likely to score low-moderate as small-scale infrastructure project that is important to community.
Decrease transportation GHG emissions	33	Encourage electrification of regional transport	Yes	Still consider for inclusion. Will need to be in coordination with Clallam Transit.	Likely to score high due to higher impact sector, high equity and other benefits, and lower costs (as partnership action). Necessary to reach carbon neutrality by 2030.
GHG emissions	68	Ban on marine fossil fuel infrastructure	No	Higher priority transportation actions to evaluate. If ban marine fossil fuel, it will be DOA.	Likely to score low-moderate due to impactful but costly and unpopular (for some) action.
GHG emissions	123	Port electrification	Yes	New action in response to feedback on “ban marine fossil fuel infrastructure.” Potentially include to focus on incentivizing the electrification of Port’s infrastructure and allow for marine electrification, which is a promising green economy sector for Port Angeles.	Likely to score moderate (maybe high) due to being impactful, moderate-high other benefits, but at least moderately costly.
GHG emissions	76	City employee commute emissions	Yes	Shows City leadership in reducing VMT.	Likely to score low due to low impact, mixed support among staff, low cost, and lower co-benefits.



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Strategy	Action #	Action Short Name	Include in Plan?	Why Excluded from MCA?	Implications of MCA Results
Decrease transportation GHG emissions	113	Medium- and heavy-duty vehicle decarbonization		Unsure about relevancy to City and City's oversight of this for pass-through vehicles.	Likely to score moderate due to higher impact, moderate feasibility and costs, mixed support, and moderate co-benefits.
Mitigate energy-related GHG emissions	12	Green incentive program		Need to work with federal partners and BPA to improve incentives.	Likely to score low . Could be improved by leveraging state programs or combining with other actions.
Reduce vulnerability	52	Acquisition program		Lowest priority from CAPG – unsure which structures would be relevant within PA limits.	Likely to score moderate-high because of impact and equity benefits. Relies on baseline assessments.
Mitigate energy-related GHG emissions	69	Low-impact development		This actions focuses on eliminating barriers for LID and using pilot LID projects.	Likely to score low-moderate due to low impact. Would be strengthened by combining with “green incentive program.”
Mitigate energy-related GHG emissions	71	Green energy	No	Low priority from CAPG. Combined with the BPA renewal agreement action (#5), which was in the MCA.	Was evaluated as part of BPA renewal agreement
Mitigate energy-related GHG emissions	74	Efficient outdoor lighting		Connect to other City-led ongoing efforts.	Likely to score low due to low impact and low-moderate on most other criteria.
Mitigate energy-related GHG emissions	75	Promote Green Business certification		Low priority from CAPG.	Likely to score low due to low impact. Could be integrated with City and community sustainable purchasing as an incentive.
Promote sustainable consumption	22	Asphalt recycling plant		Already reviewed feasibility in 2013. If an action, should focus on State legislation.	Likely to score low-moderate due to higher impact sector but higher costs and moderate on other benefits (i.e., not a promising green sector).
Promote sustainable consumption	56	Water consumption education/incentives		Focus on incentives for individual water conservation.	Likely to score similar but lower than “comprehensive climate change education and outreach”
Eliminate/reduce single use plastics	105	Single use plastics		Had ban in 2018, but 2021 state law circumvented it (have thick plastic	Likely to score similar to City and community waste diversion actions (low-moderate).



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Strategy	Action #	Action Short Name	Include in Plan?	Why Excluded from MCA?	Implications of MCA Results
				bags so not considered single use). High CAPG priority.	
Increase diversion from landfills	106	Circular economy		Will require partnership with community organizations (e.g., Around-Again, Habitat Store, Goodwill, Serenity, House Thrift Store).	Circular economy, in general, is a key gap in actions that were evaluated and is needed to meet carbon neutrality by 2030. This action is likely to score moderate-high .
Promote sustainable consumption	108	Producer responsibility		Low priority from CAPG. Will have to be at a state policy level.	Likely to score moderate due to higher impact but low-moderate on other factors.

Actions evaluated through the MCA

The results shown here are the same as those provided in the [Multi-Criteria Analysis Results](#) section. We have copied them here and organized them by sector to reduce the need to scroll to the MCA results during discussion at the March 1 CAPG workshop.

Sector Color Coding: Community Resilience & Wellbeing | Ecosystem Health | Transportation | Buildings & Energy | Consumption & Waste

Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Increase community adaptive capacity	8	City price on carbon	3.33	2.67	3.50	2.00	2.00	3.00	2.8
Increase community adaptive capacity	13	Sustainable agriculture	3.00	2.67	4.00	5.00	3.50	3.33	3.4
Prepare for extreme events	14	Wildland urban interface	2.67	3.67	5.00	3.00	3.50	2.67	3.4
Increase community adaptive capacity	17	SLR vulnerability assessment	2.67	4.33	4.50	4.00	3.00	3.33	3.5
Increase community adaptive capacity	36	Climate migration policy	3.67	4.67	3.50	3.00	4.00	3.33	3.8
Increase community adaptive capacity	115	Hazard Mitigation Plan implementation	2.00	3.33	3.50	4.00	4.00	4.00	3.3
Increase community adaptive capacity	45	City asset vulnerability	2.00	4.00	4.50	4.00	3.50	2.33	3.3



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Prepare for extreme events	47	Flood vulnerability and risk	2.00	4.33	2.50	4.00	3.50	1.00	2.9
Increase community adaptive capacity	59	Water supply monitoring & enhancement	2.67	3.33	3.50	4.00	4.50	3.33	3.5
Increase community adaptive capacity	119	Comprehensive climate outreach & education	2.00	4.33	4.00	3.00	5.00	3.33	3.6
Increase community adaptive capacity	116	Housing Action Plan implementation	3.33	3.67	4.00	4.50	5.00	3.67	4.0
Prepare for extreme events	86	Climate resilience & emergency planning	2.33	4.67	4.50	4.00	4.00	3.33	3.7
Restore and protect natural habitat	9	Urban tree canopy, parks, and open space	2.33	3.67	5.00	4.00	3.50	4.00	3.6
Restore and protect natural habitat	24	Shoreline Master Program updates	2.33	4.33	3.50	4.00	3.00	3.00	3.3
Restore and protect natural habitat	25	Critical area protection	2.33	4.00	3.50	4.00	3.00	3.00	3.2
Restore and protect natural habitat	26	Harmful algal bloom monitoring	2.67	4.00	4.50	4.00	3.00	2.00	3.3
Restore and protect natural habitat	27	Salmon habitat protection	2.33	3.33	3.00	4.00	3.00	2.67	3.0
Increase carbon sequestration potential	28	Extension of timber harvest rotation	3.00	3.33	3.00	3.00	3.00	2.67	3.0
Restore and protect natural habitat	37	Coastal erosion reduction	3.33	3.33	4.50	3.00	3.00	3.33	3.4
Restore and protect natural habitat	49	Native plant landscaping	1.67	2.33	4.50	3.00	3.00	2.67	2.7
Restore and protect natural habitat	51	Wildlife corridors	2.33	2.67	4.50	4.00	3.50	2.33	3.1
Increase opportunities for carbon	114	Forest and marine habitat preservation	5.00	3.33	2.50	4.50	4.00	4.00	3.9



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
sequestration and storage									
Decrease transportation GHG emissions	1	Transit infrastructure, equity, & safety	3.67	3.00	3.50	3.00	5.00	3.33	3.7
Decrease transportation GHG emissions	30	Increase EV use for general public	3.67	4.33	4.50	3.00	3.00	2.33	3.6
Decrease transportation GHG emissions	31	Biking and walking infrastructure	3.33	2.67	4.00	5.00	3.00	3.00	3.4
Decrease transportation GHG emissions	32	Municipal fleet electrification & idle reduction	2.67	3.33	2.50	4.00	5.00	3.00	3.4
Increase transportation resiliency	35	Transportation vulnerability	2.33	3.67	3.50	4.50	3.50	3.33	3.3
Increase resiliency of energy systems	2	Community renewable energy grid	3.67	2.67	3.50	3.00	5.00	3.67	3.6
Mitigate energy-related GHG emissions	3	Energy efficiency retrofits	2.67	2.33	4.50	3.00	4.00	2.33	3.1
Mitigate energy-related GHG emissions	4	Energy efficient home heating sources	2.67	2.33	4.50	3.00	4.50	2.33	3.2
Mitigate energy-related GHG emissions	5	BPA renewal agreement	2.33	2.00	3.00	3.00	4.00	3.33	2.9
Mitigate energy-related GHG emissions	10	Net metering monitoring	2.33	3.33	4.50	4.00	3.00	2.00	3.1



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Strategy	Action #	Action Short Name	Impact	Cost	Feasibility	Community Support	Equity	Co-Benefits	Priority Score
Mitigate energy-related GHG emissions	11	Green Building standards	2.67	3.00	4.00	2.00	3.00	3.67	3.0
Reduce vulnerability	48	Climate-smart finance policies	3.33	3.00	3.50	3.50	3.50	3.00	3.3
Reduce vulnerability	64	Retrofit buildings for vulnerability	3.33	3.00	4.00	4.00	3.50	3.33	3.5
Mitigate energy-related GHG emissions	83	EV parking requirements	3.67	2.67	3.50	2.00	4.50	3.33	3.4
Promote sustainable consumption	7	City and community sustainable purchasing	4.00	3.33	5.00	3.50	3.00	3.00	3.7
Decrease waste-related GHG emissions	19	Wastewater facility GHG	2.33	5.00	5.00	3.50	3.00	3.67	3.7
Promote sustainable consumption	20	Commercial food waste diversion programs	2.33	2.67	4.50	4.00	4.00	3.33	3.3
Promote sustainable consumption	21	Residential food waste diversion programs	2.00	3.67	5.00	4.00	3.00	2.67	3.3