

Energy & Climate Change Planning in Lakewood, WA

April 4, 2024 PSRC GMPB

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City of Lakewood



Background

The Greenhouse Effect

Some solar radiation is reflected by the Earth and the atmosphere.

Some of the infrared radiation passes through the atmosphere. Some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the Earth's surface and the lower atmosphere.

Most radiation is absorbed by the Earth's surface and warms it.

Infrared radiation is emitted by the Earth's surface.

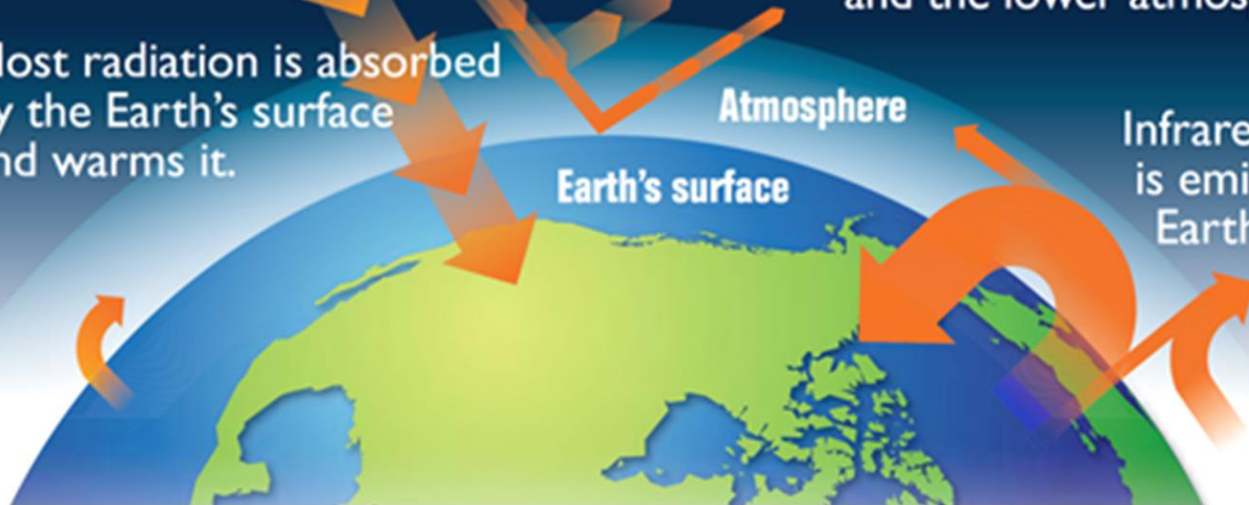
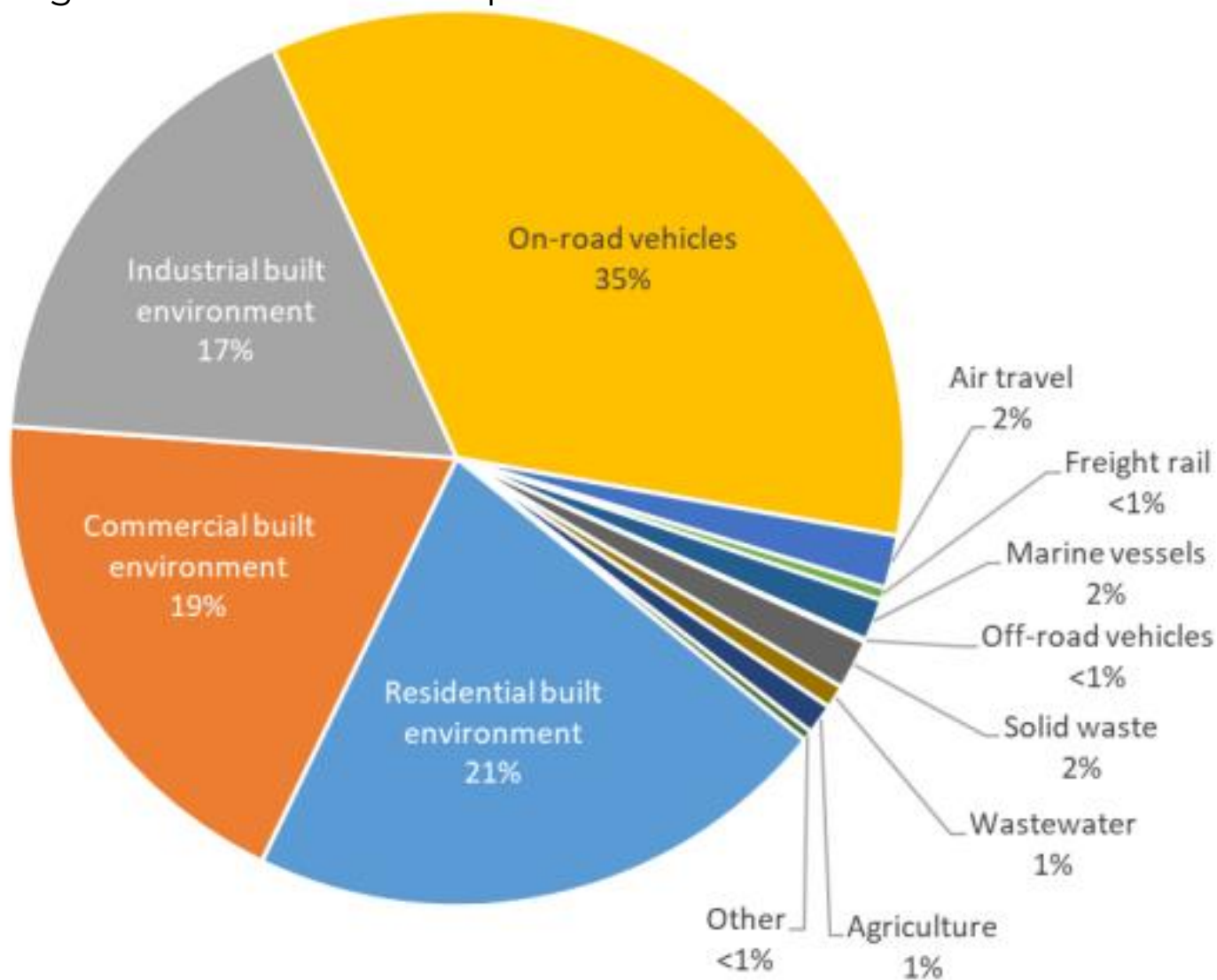


Figure 2 (EPA 2012)

Figure 1. Sources of greenhouse gas emissions for the PSCAA area in 2015, in million MgCO_{2e} (total = 34.4 million MgCO_{2e}).

Almost half of all greenhouse gas (GHG) emissions in the Puget Sound region are from the transportation and mobile sector.

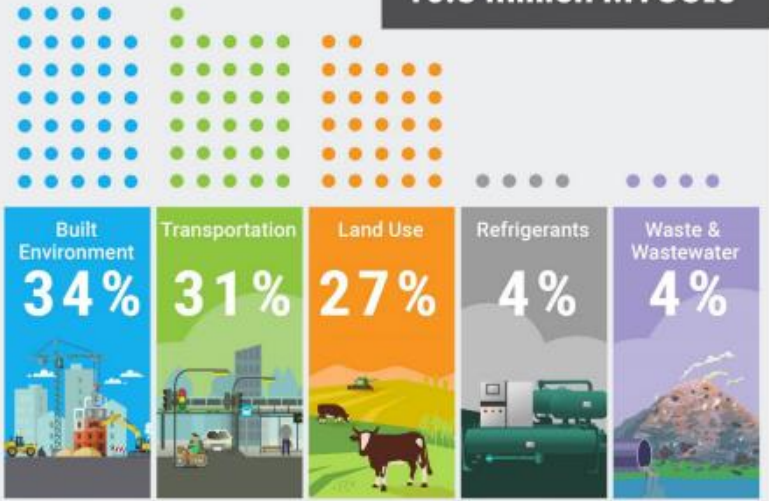


2019 Geographic GHG Emissions Sources in Pierce County

Pierce County Communitywide Geographic Greenhouse Gas Emissions
Puget Sound Regional Emissions Analysis Cascadia Consulting Group FINAL REPORT, August 2022

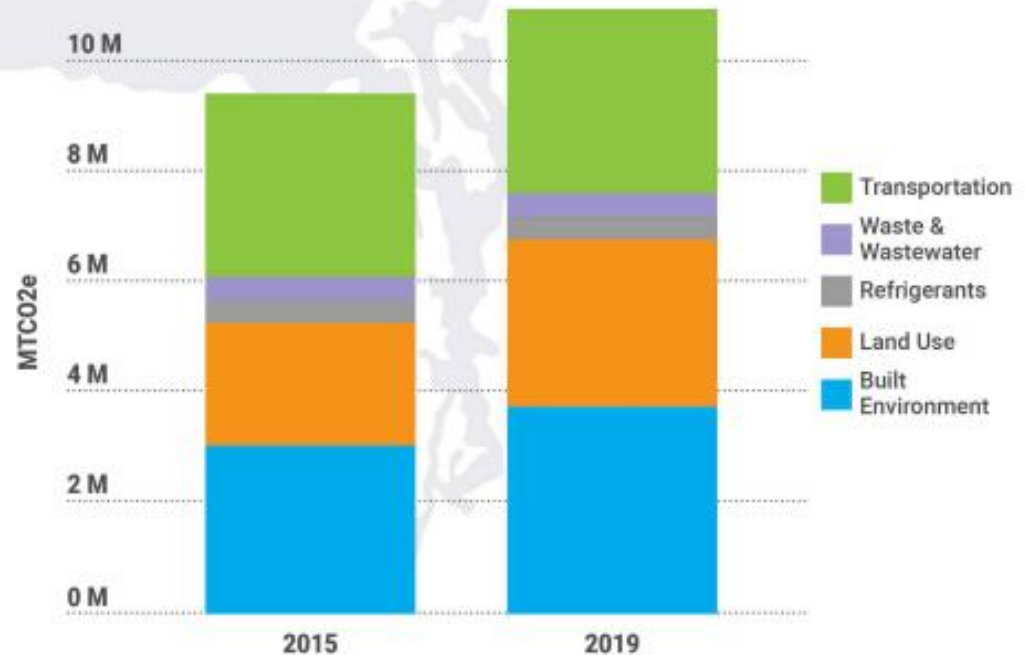
WHERE DO OUR EMISSIONS COME FROM?

2019 Pierce County
Greenhouse Gas Emissions:
10.8 million MTCO₂e



HOW ARE OUR EMISSIONS CHANGING OVER TIME?

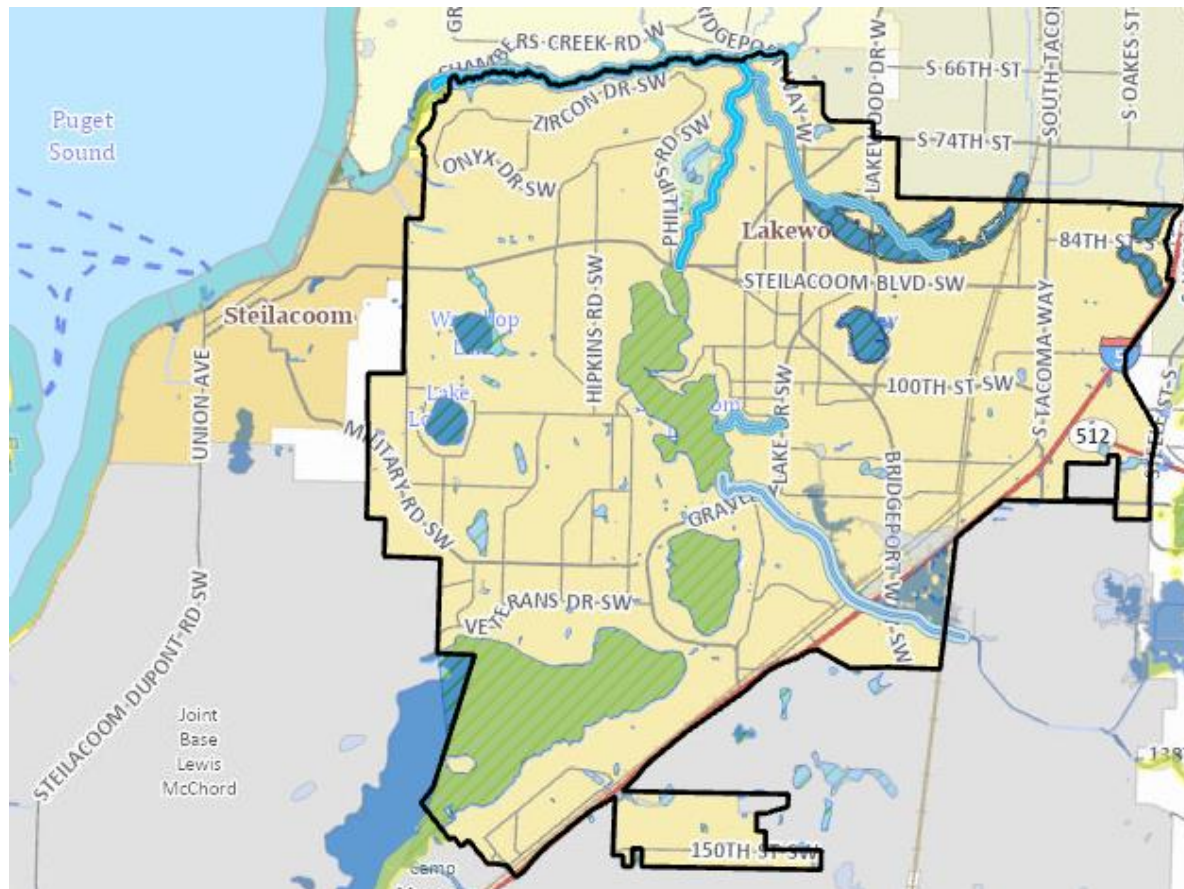
From 2015 to 2019, our region increased overall emissions by about 16%. While population increased 7% during this same period, per capita emissions increased by 9%.



About Lakewood

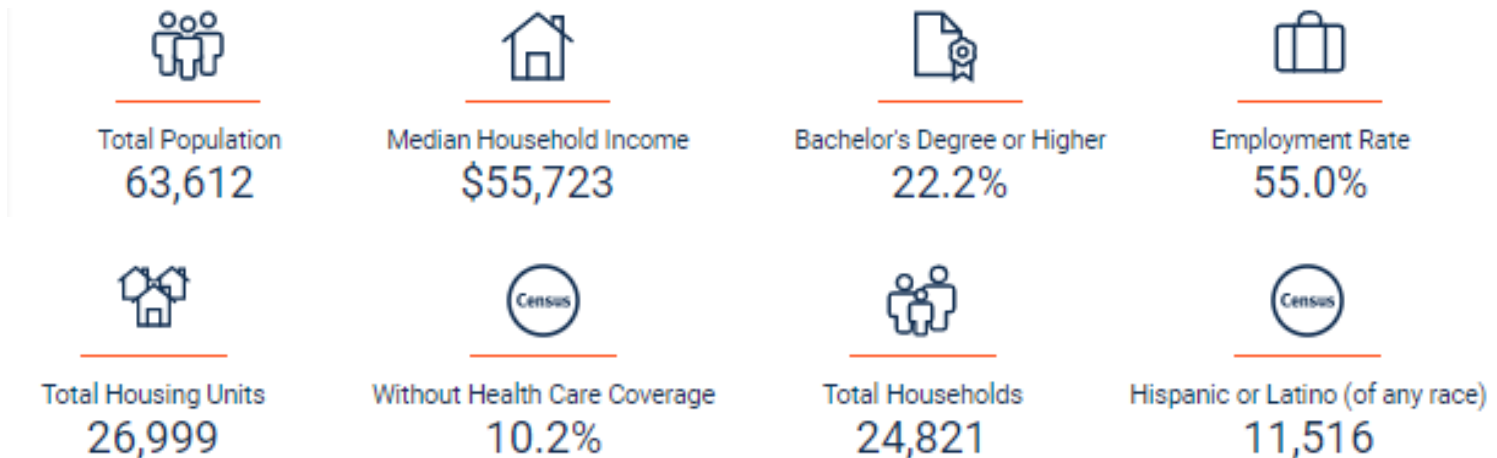
1,098 acres, or 9% Lakewood's 12,127 acres are covered by lakes. 1,518 acres (12.5%) are designated open space, some of which do, or could, feature significant tree stands. The City also has a significant number of creeks and wetlands.

Lakewood is bisected by I-5, which is a significant source of GHG emissions.



About Lakewood

- Incorporated in 1996
- 2nd largest city in Pierce County (2020 Census Population: 63,612)
- Very diverse economically (“barbell community”), racially, and culturally
- Host City to: Joint Base Lewis McChord (JBLM); Western State Hospital; Fort Steilacoom Park and Summerfest; Clover Park Technical College; Pierce College; Pierce Transit; Sounder Station



Lakewood is one of 15 Washington cities with a majority population of people of color; as of 2020, 52% of Lakewood's population was BIPOC.

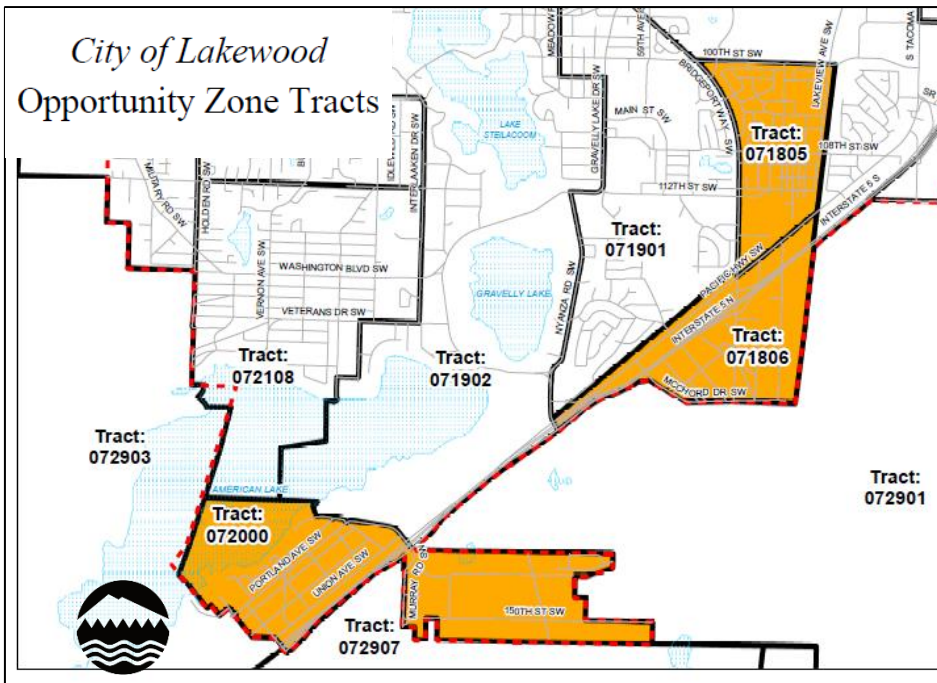
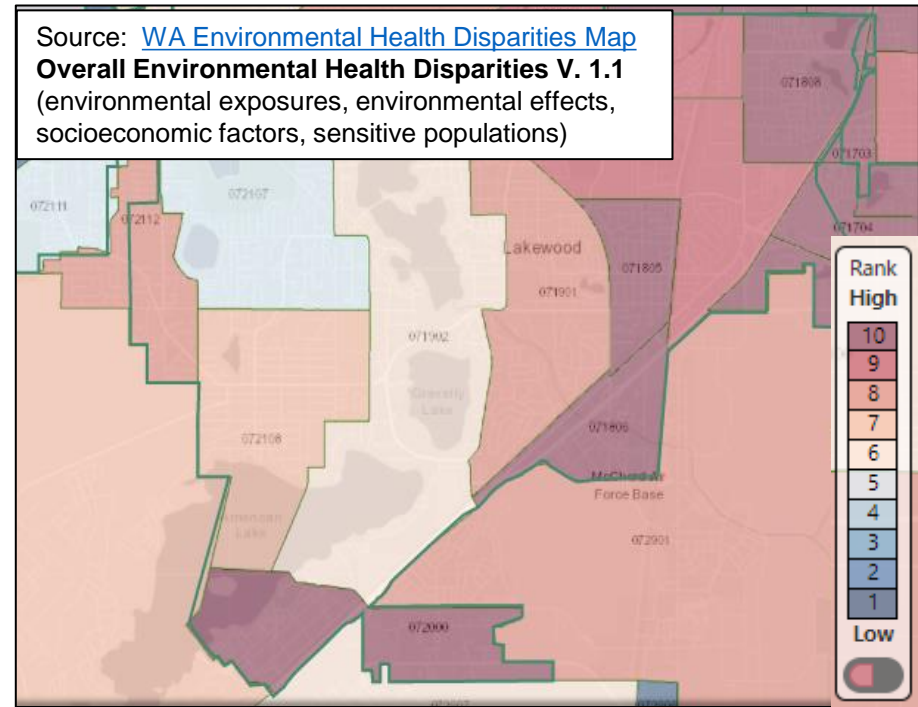
The City had a 2020 overall poverty rate of 14.7%; BIPOC communities had significantly higher poverty rates.



Lakewood includes 4 economically stressed and racially diverse areas with:

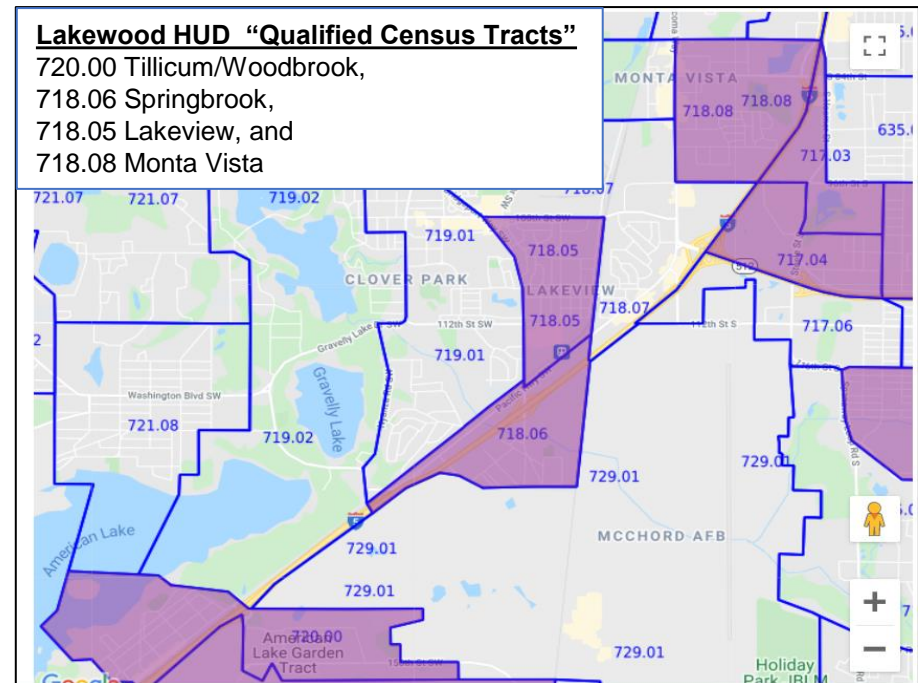
- Federal Opportunity Zones
- HUD-Qualified Census Tracts
- High Scores for WA Environmental Health Disparities

Source: [WA Environmental Health Disparities Map](#)
Overall Environmental Health Disparities V. 1.1
 (environmental exposures, environmental effects, socioeconomic factors, sensitive populations)



Lakewood HUD “Qualified Census Tracts”

720.00 Tillicum/Woodbrook,
 718.06 Springbrook,
 718.05 Lakeview, and
 718.08 Monta Vista



Required Coordination for Energy & Climate Change Planning and Funding

Lakewood contracts for water, sewer, and power from multiple utilities and agencies, which affects and complicates City's ability to set its climate change policies and long-range planning goals:

Sewer: Pierce County Sewer Utility

Water: Lakewood Water District

Power: Lakewood Light & Power
Puget Sound Energy
Tacoma Power

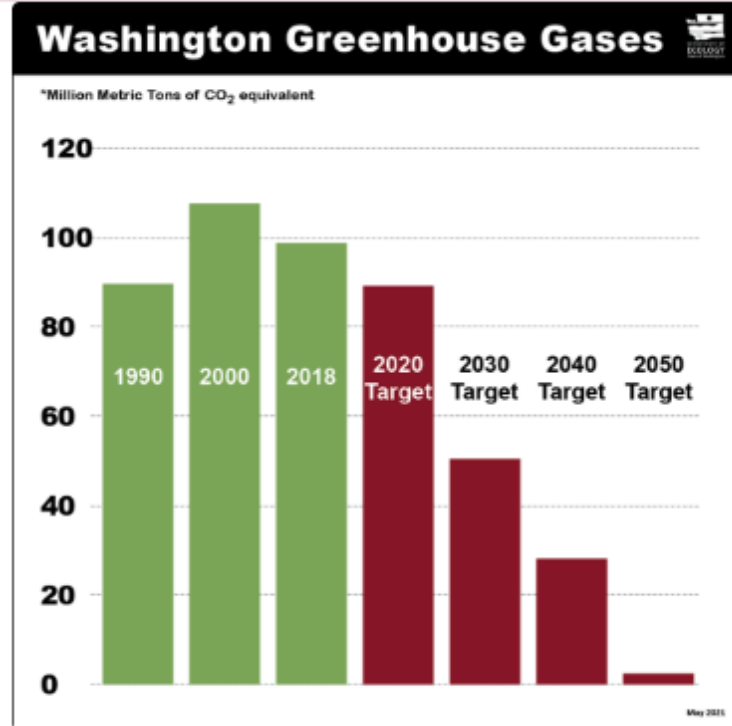


**Pre-2024 State and Regional
Legislative and Regulatory Focus on
Climate Change**

Greenhouse gas emission limits

In 2020, the Washington Legislature set new greenhouse gas emission limits in order to combat climate change. Under the law, the state is required to reduce emissions levels:

- **2020** - reduce to 1990 levels.
- **2030** - 45% below 1990 levels.
- **2040** - 70% below 1990 levels.
- **2050** - 95% below 1990 levels and achieve net zero emissions.



The Puget Sound Clean Air Agency Board's regional targets for reducing GHG emissions:

- 50% below 1990 levels by 2030; and
- 80% below 1990 levels by 2050.

VISION 2050

Key Policy Themes



-  Increase **housing** choices and affordability
-  Provide **opportunities** for all
-  Sustain a strong **economy**
-  Significantly reduce greenhouse gas **emissions**
-  Keep the region **moving**
-  Restore the health of **Puget Sound**
-  Protect a network of **open space**
-  Growth in **centers** and near **transit**
-  Act **collaboratively** and support **local efforts**



Significantly reduce greenhouse gas emissions. Climate change is an urgent environmental, economic, and equity threat being addressed at all levels, from the local to an international scale. VISION 2050 outlines how state, regional and local partners can act in coordination to reduce emissions in the region and prepare for climate impacts. View the **climate change analysis** completed for the 2018 Regional Transportation Plan.

VISION 2050 includes 12 goals related to Climate Change, including reduce GHG emissions to 80% below 1990 levels per PSCAA.

VISION 2050 also incorporates PSRC's 4-Part Greenhouse Gas Strategy.

- **Land Use:** further the goal of balancing jobs and housing and pursue additional refinements through strategies such as **transit-oriented development**.
- **User Fees:** transition the region over time to a **user fee/roadway pricing system**.
- **Choices:** continue to provide travelers **options to the SOV** and continue research into the costs and benefits of various strategies.
- **Technology:** research the **potential technological advances** that may be likely in our region by the year 2040.

Creating the 2021 Energy & Climate Change Chapter for Lakewood's Comprehensive Plan



Figure 1 (ART DAILY, June 2019)

In 2021, the City of Lakewood adopted a new Comprehensive Plan **Energy and Climate Change Chapter (ECCC)**, which was based in part on low- or no-cost International Council for Local Environmental Initiatives (ICLEI) and Google Environmental Impact Explorer (EIE) data collection tools.

The City's intent was to proactively develop, before state mandates came into effect:

- policies;
- incentives and voluntary actions; and, potentially,
- regulations.

Environmental justice and equity policies were explicitly included in the ECCC.



Identifying Potential Climate Change Impacts to Lakewood

- More frequent peak storm events;
- Rising Puget Sound water levels;
- Intermittent lakes are likely to become more intermittent or may disappear;
- Areas with steep slopes could have increased landslides;
- Rising flood waters could impact I-5 between Highway 512 and Bridgeport Way;
- Additional pollutant loading are likely to worsen existing water quality issues in the city's numerous lakes and streams); and
- Fire potential may result in loss of vegetation and negative impacts to air quality.



Setting Realistic and Effective Goals and Actions

- Given the causes of GHG emissions in the City, what are the **most effective actions to take** to reduce emissions over time?
- Given the perception of residents, how can Lakewood be **most effective in garnering support for actions** (citizen action, taxes or other \$ support, etc.)
- **What is Lakewood unable to do or affect** regardless of its desires?
- **What must Lakewood rely on others to do** (e.g., changes to electrical grid, car manufacture, employment location & travel trends, utility power sources, etc.)
- **What can City do with its public perception survey results?**



Reducing GHG Emissions AND Improving Carbon Sequestration

In addition to **reducing GHG emissions**, the City of Lakewood also analyzed how to **remove carbon emissions** from the atmosphere through:

- locally forested areas and tree canopy in designated open space areas;
- lawns/fields; and
- wetlands.



Collecting GHG emissions data for Lakewood

Google's **Environmental Insights Explorer (EIE)** program offers a means by which cities can calculate GHG emissions.

Core Insights



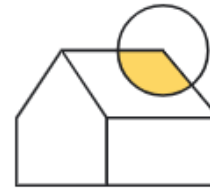
Building Emissions

Estimated emissions from heating, cooling, and powering residential and non-residential buildings, based on Google Maps data.



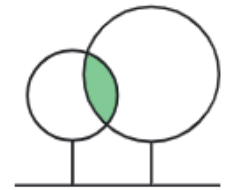
Transportation Emissions

Estimated emissions of all trips that start or end within city boundaries based on aggregated, anonymized Location History data.



Rooftop Solar Potential

Estimated solar energy production potential of buildings based on total sunshine exposure, weather patterns, and roof dimensions.



Tree Canopy

Estimated tree canopy coverage across city regions, based on aerial imagery and machine learning algorithms.



Lakewood

Washington, United States

Size: 49 km²

Population (2020): 65,469

Building emissions



Google estimate

293,000

Total tCO₂e per year

[Explore and customize](#)

Transportation emissions



Google estimate (GPC Protocol compliant)

2022

181,000

Total tCO₂e per year

Up 4% from 2021 Google estimate

Tree canopy



Google estimate

29%

Tree canopy coverage

[Explore the data](#)

Rooftop solar potential

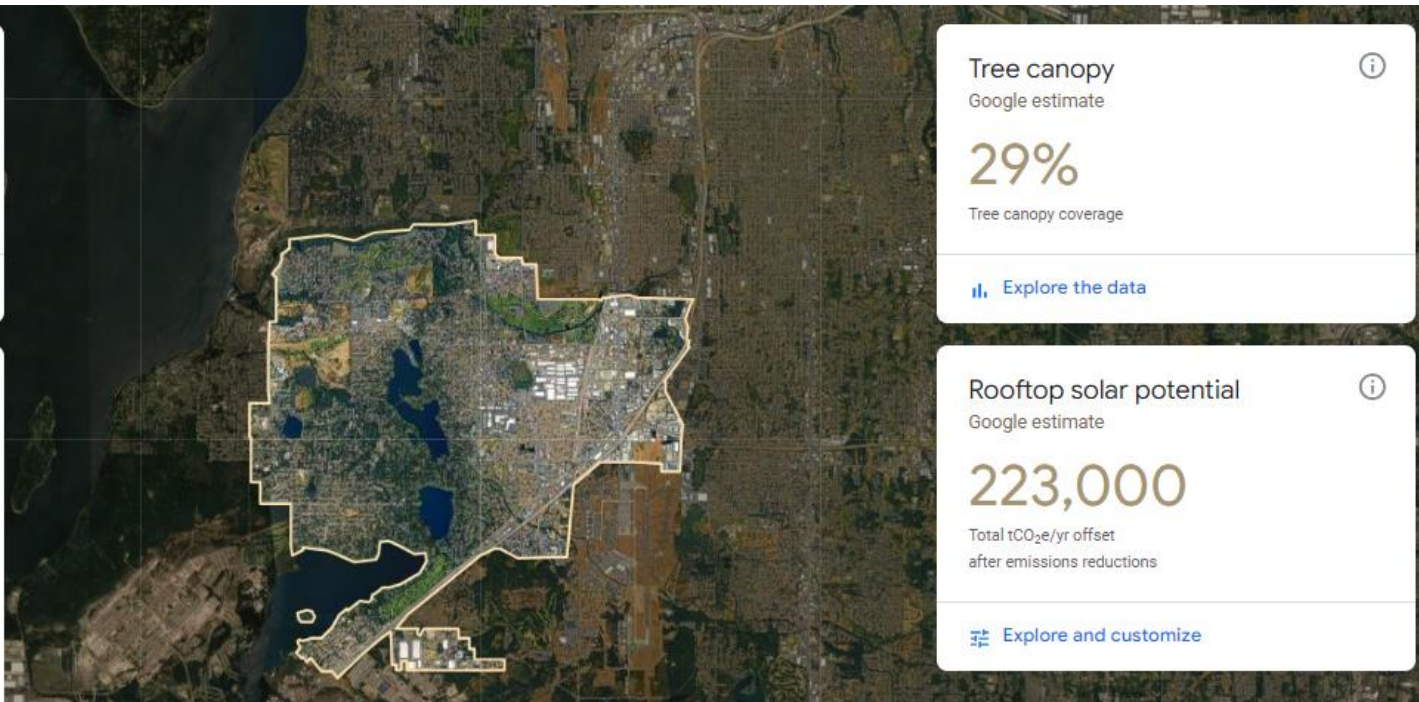


Google estimate

223,000

Total tCO₂e/yr offset
after emissions reductions

[Explore and customize](#)





Track emissions direct and indirect from



Energy



Transportation



Waste



Consumption



Forests and Trees

Output community inventory results for



U.S. Community Protocol



GCOM Common Reporting Framework



Global Protocol (GPC)

Free with Membership

ICLEI members receive free access to ClearPath along with dedicated technical assistance and an in-depth library of ClearPath trainings.

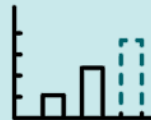
Streamline Your Emissions Management

Engineered for your full mitigation journey.



Set Baseline

Create a baseline inventory of GHG emissions from your community, operations, or region



Forecast Emissions

Produce business-as-usual scenarios based on custom factors



Explore Actions

Plan using over 60 calculators modeling GHG reductions from specific actions



Monitor Progress

Track each action and the energy savings and emissions reductions achieved



<https://vimeo.com/438996341>

<https://icleiusa.org/clearpath/>



MEMO

High-Level Policy/Plan Review for Lakewood, WA per the Growth Management Act

Technical Feedback and Recommendations for Next Steps

“ICLEI staff have experience using Commerce’s required platform, Climate Mapping for a Resilient Washington, to document hazards for a Washington community’s climate risk and vulnerability assessment (CRVA.)

Lakewood can choose to leverage membership benefit hours for support using the platform.

ICLEI also provides discounted Fee-For-Service work to members and can complete parts of Step 1 for Lakewood.”



Other data sources for Lakewood's ECCC

In 2022, the City collected **public perception feedback** about climate change in order to inform its ECCC implementation planning. One-on-one interviews, surveys and other public outreach were all conducted to gather reactions to the following questions (among others) about climate change:

- whether it is the result of human activities;
- whether it can be affected by community and local government actions;
- what type of actions can individuals take to mitigate and/or prepare for the results of climate change.

Specific effort was made to gather perception results from a wide range of City residents, including those with BIPOC and/or military backgrounds and connections.



A STUDY ON CLIMATE CHANGE PERCEPTIONS IN LAKEWOOD, WASHINGTON

PREPARED BY

Charlee Thompson
Cassidy Berlin
Eric Villanyi
Tori Chapman



FOR THE CITY OF LAKEWOOD



COMMUNICATIONS

- **Focus on the benefits of potential climate initiatives** and on **educating the public** about lifestyle changes they could make, emphasizing the changes that would be most seamless for residents to adopt
- **Acknowledge the stress people feel and connect it to a specific action at the local level**
- **Use language that clearly grounds climate communications in scientific sources and cite them**

EQUITABLE ENGAGEMENT & OUTREACH

- Capitalize on existing **relationships with individuals or organizations who represent or serve target populations and adequately compensate them** for their time
- Tabling events, canvassing, and other **outreach initiatives that enable one-on-one conversations** with community members **should be held in settings that are already familiar and comfortable to the target population**
- **Communicate to the target population (1) the goals of the outreach, (2) how long the process will take, (3) any other opportunities for community members to voice their concerns, and (4) how the results of the outreach will be used in City decision-making**

POLICY DEVELOPMENT

- **Green Spaces, Tree Cover, & Community Gardens:** Increasing green spaces, tree cover, and gardens will decrease the Urban Heat Island Effect and improve mental health
- **Disaster Preparedness:** Identify and offer resources to those who will be most impacted by extreme heat and wildfire smoke
- **City Partnership Opportunities:** Partner with regional service providers like PSE and Pierce Transit to implement policies that support decreased resident energy use



Tree Committee, Tree Code Update, and Tree Canopy Goal



Tree Advisory Committee

City Council has convened a committee to review tree preservation code and suggest improvements. The committee will work together and factor community opinion to form a consensus on code amendments.

[Agenda & Schedule](#)

[Membership](#)

[Related Links](#)

[Tree Fact Sheet](#)

3.12.8 Urban Forestry

GOAL LU-60: Institute an urban forestry program to preserve significant trees, promote healthy and safe trees, and expand tree coverage throughout the City.

Policies:

LU-60.1: Establish an urban forestry program for the City.

LU-60.2: Promote planting and maintenance of street trees.

LU-60.3: Provide for the retention of significant tree stands and the restoration of tree stands within the City.

LU-60.4: Work towards a citywide goal of 40% tree canopy cover by the year 2050. Consider opportunities to increase canopy and environmental equity when evaluating tree canopy distribution.

Article III. Tree Preservation

18A.70.300 Purpose.

18A.70.310 Tree removal applicability/exemptions.

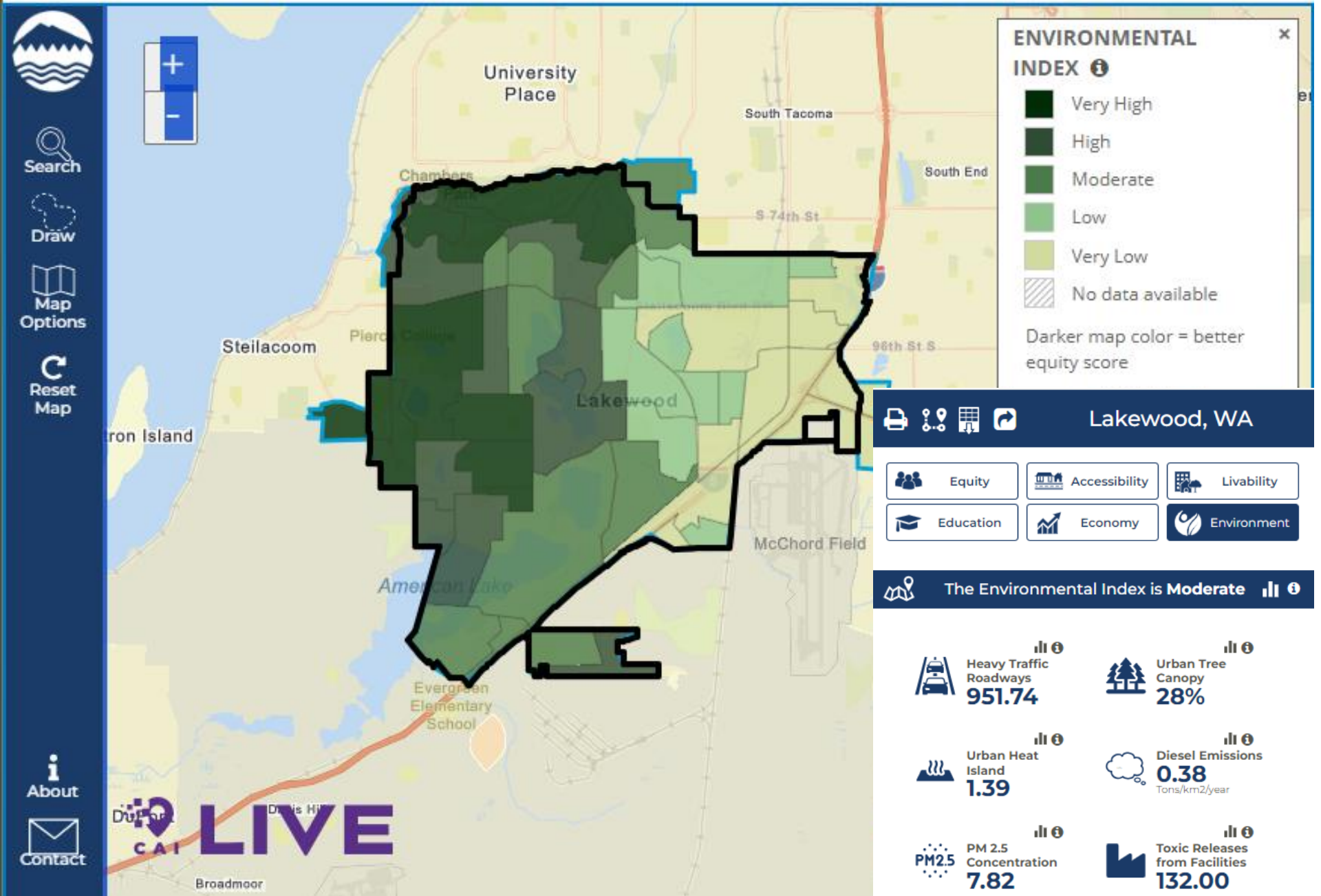
18A.70.320 Significant tree preservation.

18A.70.330 Oregon white oak preservation.

18A.70.340 City Tree Fund.

18A.70.350 Definitions.



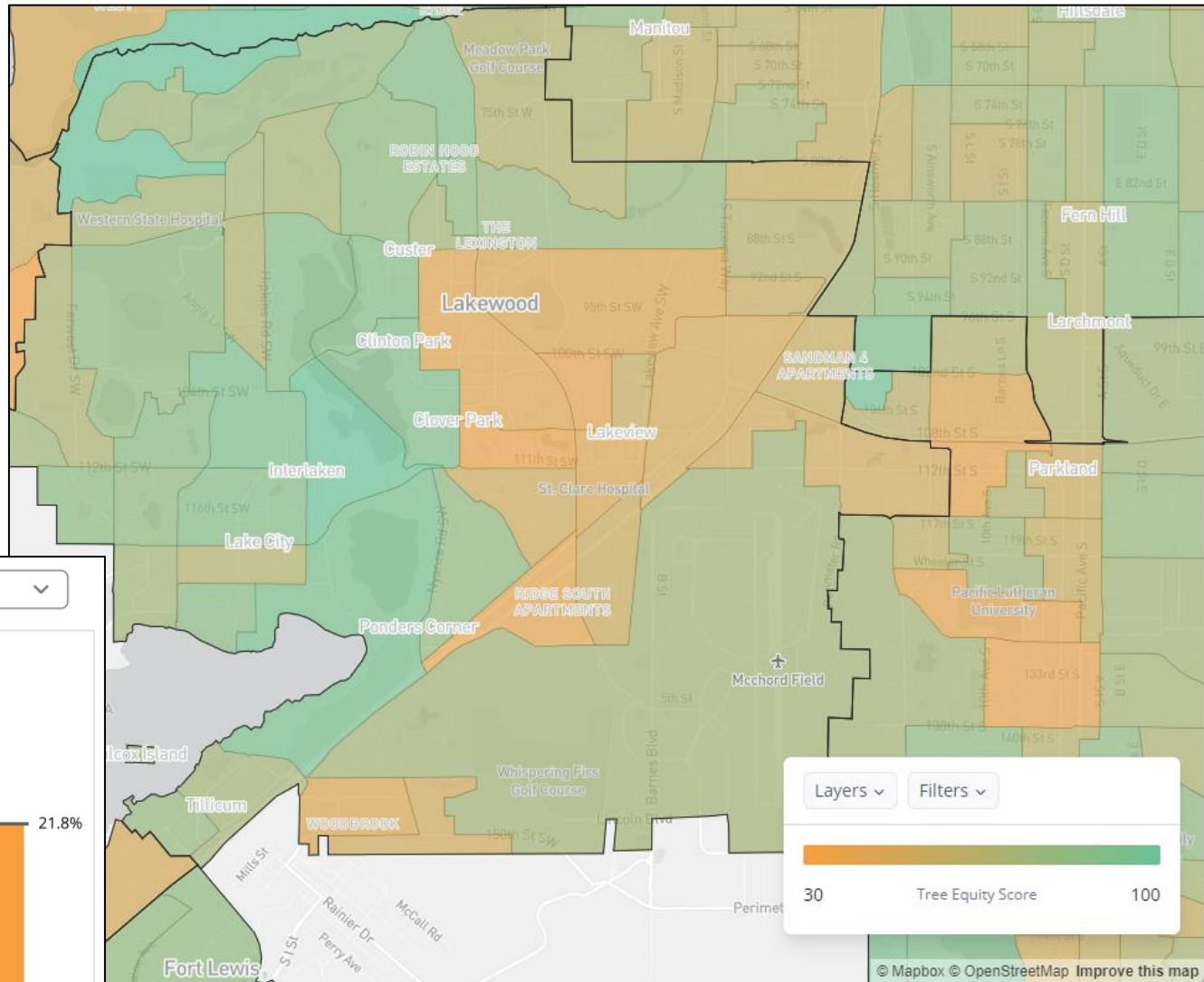


<https://lakewood.caimaps.info/cailive>



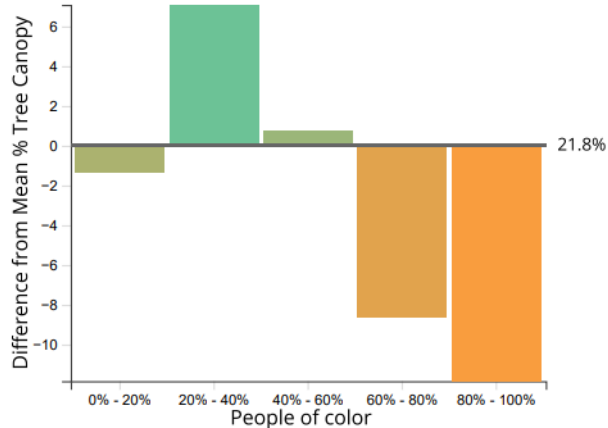
NATIONAL EXPLORER

Lower tree canopy located in many of the same areas as poverty, higher % of BIPOC population

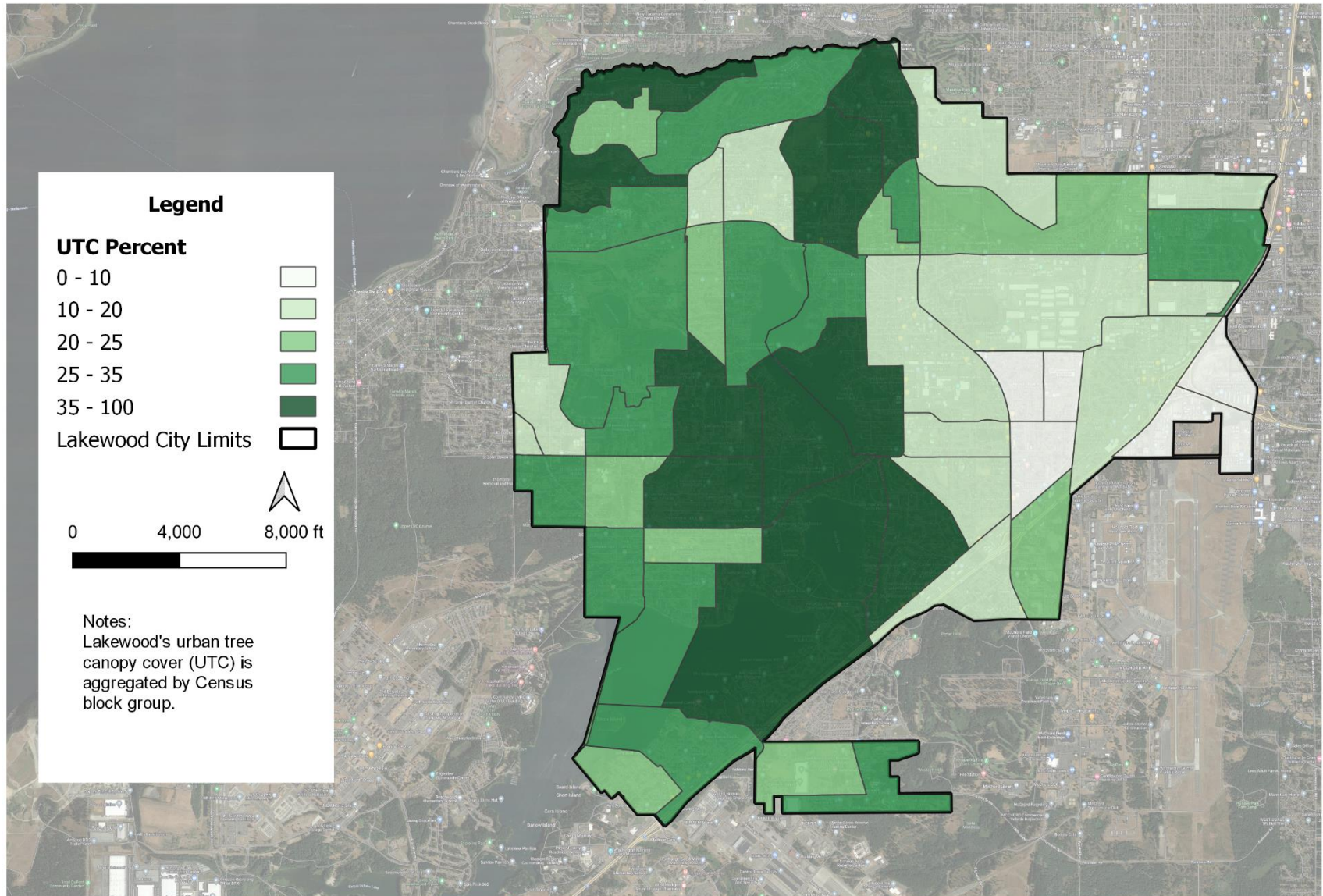


% Tree Canopy vs.

% People of Color



Urban Tree Canopy Cover Distribution Lakewood, WA



Tree Canopy and Community Demographics (Note: More Intense Colors are Greater Amounts)



Tree Canopy Percent

Median Family Income

Persons of Color

American Forest, 2021

US Census 2020

US Census 2020



ECCC KEY FINDINGS AND RECOMMENDATIONS

- **GHG emissions in the City are primarily generated by motor vehicles and largescale commercial and industrial operations.**
- The City needs to **incorporate racial and economic equity into all climate change policies and actions.**
- **Collective action and sustained effort is necessary from both the public and private sectors.**
- Local and regional initiatives should be coordinated to **protect environmental and human health.**
- **The City can assume a leadership role in responding and adjusting to the potential impacts of climate change.**
- Therefore, **reduction measures must involve residents, local businesses and neighboring jurisdictions and agencies.**





KEY ECCC CLIMATE CHANGE RECOMMENDATIONS

Finding 1: Lakewood can provide leadership and engagement.

Finding 2: Lakewood can actively regulate land uses to reduce greenhouse gas emissions.

Finding 3: Lakewood can improve upon its active modes of travel.

Finding 4: Restoring and protecting the natural environment will help to mitigate impacts of climate change.

Finding 5: Preparing for potential climate change impacts is as critical as reducing greenhouse gas impacts and planning for long-term sustainability.



ENERGY & CLIMATE CHANGE CHAPTER GOALS

Goal EC 1: Provide Leadership in Managing Climate Change

Goal EC 2: Improve Clean and Efficient Transportation Options

Goal EC 3: Increase Sustainable and Energy-Efficient Systems

Goal EC 4: Encourage Sustainable Development

Goal EC 5: Develop a Hazards Management Plan (developing a climate-resilient community)

ECCC COMPLIANCE/CONSISTENCY WITH STATE LAW & REGIONAL POLICIES:

- Aligns with WA State GHG policies.
- Aligns with the PSCAA-adopted GHG emission reduction targets for the Central Puget Sound region.
- Aligns with PSRC's 4-part greenhouse gas strategy (land use, user fees, transportation choices, & technology).
 - (Does not include policies on user fees specific to regional transportation systems.)
- Addresses 10 of the 12 PSRC-adopted climate change policies.
 - (Does not address either the impacts of climate change on the region's hydrological systems or the siting and planning for relocation of hazardous industries and essential public services due to sea water rise.)



ECCC Implementation

- The ECCC's 89-item implementation action list was prioritized and monetized.
- 32 items identified for draft 3-year Implementation Plan.
- 14 Items adopted in initial 3-year work plan in 2022.

| ATTACHMENT 3 Climate Change Metric Analysis | | | | | | | | | | | | | | |
|--|------------|----------|-------|----------|-------|----------|-------|-------------|---------------|------------|-----------------|----------------------------|-------------------------------------|------------------------------|
| Work Plan Topic | Difficulty | | | Priority | | | | Timing | | | | Financial Impacts | | |
| | High 1 | Medium 2 | Low 3 | Crit 1 | Imp 2 | Normal 3 | Low 4 | Progress | Freq | Start Date | Completion Date | Within current City budget | In budget with new FTE ¹ | Requires consulting services |
| Incorporate an environmental justice assessment into the climate change work plan. | X | - | - | - | X | - | - | Not started | Unique | Aug 22 | Dec 22 | - | X | - |
| Prepare a comprehensive greenhouse gas emissions inventory and forecast. | - | X | - | X | - | - | - | Completed | Annual | 2020 | 2024 | X ² | | \$2,000 annually |
| Establish emissions reduction goals for Lakewood ³ . | X | - | - | X | - | - | - | Not started | Every 3 years | Aug 22 | Aug 23 | - | X | - |

| ATTACHMENT 4 Work Plan Items Sorted by Importance (lower the number the higher the importance) | | | | | |
|---|------------|----------|--------|--------|---|
| Work Plan Items | Difficulty | Priority | Timing | Budget | Totals (the lower the no. the higher the level of importance) |
| Establish a trip reduction policy that includes a remote work strategy, and appropriate technology. Consider incorporation into the city's land use and development code. | 2 | 1 | 1 | 2 | 6 |
| Promote/encourage green development standards (e.g., LEED and equivalent, and low impact development) in both public and private development and operations. | 1 | 2 | 1 | 2 | 6 |



... and then ...

2024 State Legislative Action: HB 1181

The goals of the Growth Management Act (GMA) are amended as follows:

- The **transportation** goal must encourage efficient multimodal transportation systems that will reduce greenhouse gas (GHG) emissions and per capita vehicle miles traveled (VMT);
- The **open space and recreation** goal must retain green space and enhance fish and wildlife habitat;
- The **citizen participation and coordination** goal must encourage the participation of vulnerable populations and overburdened communities in the planning process;
- **Climate change and resiliency is added to the goals of the GMA.** Comprehensive Plans, development regulations, and regional plans must support state GHG emissions reduction goals and per capita VMT and foster resiliency to climate impacts and natural hazards, among other requirements.

NEXT STEPS

- Review and update ECCC per 2024 Comprehensive Plan Periodic Update requirements
- Coordinate pending Urban Forestry program, ECCC, Parks & Open Space, and Public Works budgeting and implementation.
- Review and update ECCC and Work Plan per HB 1181 by 2029.

Thank you



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