Green Projects and Districts

Transportation System Planning
Comprehensive Planning (Land Use)

Designing streets and a mix of uses to create vibrant and resilient communities.

Watershed Planning (Environment)
Natural Conveyance Systems
Undeveloped Public Lands, Creeks, Ditches, and Rivers
Rights of Way

40% of the land area, 60% of the impact to the watershed.

Streets

Roads

Easements
Rights of Way

Trees and green streets mitigate run off impacts.
Rights of Way
Development Sites
Development Sites
Working as a District
Working as a District

- Evapotranspiration: Emitting moisture to the air
- Surface Run Off: Reducing downstream impacts
- Infiltration: Recharging the aquifer

Water Movement:
- Interflow (in)
- Ground-water (in)
- Evapotranspiration (in)

Percentage:
- Surface Runoff: 73%
- Interflow (in): 19%
- Ground-water (in): 6%
- Evapotranspiration (in): 3%
Working as a District

- Surface Runoff: 47%
- Interflow: 21%
- Ground-water: 33%
- Evapotranspiration: 0%
Working as a District

Potable Water

Storm Water and Sewer

Recycled Water

Outfall

To conserve water, this building uses reclaimed water to flush toilets and urinals.
Projects: Right of Way: K STREET, District of Columbia
Projects: Parcels: Oregon Convention Center
Projects: Parcels: Oregon Convention Center
Projects: Parcels: Oregon Convention Center
Projects: Parcels: Bridgeport Health Center
Projects: Parcels: Bridgeport Health Center
Projects: Parcels: Bridgeport Health Center

Storm water Totem

Jets

Swales

Outfall to Tualatin River
Projects: Parcels: Bridgeport Health Center
Projects: Parcels: High Performance Buildings: 12 W

- **Four Wind Turbines** produce 10–12,000 kWh of electricity per year. Monitoring of wind conditions and turbine performance will improve knowledge for future projects.
- **Solar Thermal** panels heat 24% of hot water used in the building, offsetting natural gas use.
- **Roof Gardens** clean, detain and filter rainwater and significantly reduce roof temperatures in warmer months.
- **Low-e Glass** admits 55% of visible sunlight but reflects 70% of the associated heat, reducing energy use for lighting and space cooling.
- **Rainwater Re-use** in toilet flushing on the office floors, and to irrigate the green roofs, reduces use of city water by 286,000 gallons per year.
- **Water-efficient Plumbing Fixtures** help reduce water use by more than 44%.

- **Operable Windows** provide occupants fresh air, cooling, and a connection to the outdoors.
- **Daylight Sensors** switch off electric lights when there is ample daylight, reducing lighting energy use by 60%.
- **Exposed Concrete** moderates indoor air temperatures. Mass is cooled with cool night air in the summer months and absorbs excess heat throughout the day.
- **Passive / Chilled Beams** provide energy-efficient cooling on the hottest days.
- **Under-Floor Air Distribution** efficiently delivers moderate-temperature air directly to occupants. Personal adjustable floor vents provide control over ventilation.
- **Water Storage Tank** temporarily stores up to 22,000 gallons of rainwater and condensation for re-use.
- **Efficient Central Cooling** plant in the nearby Brewery Blocks provides chilled water for space cooling.
- **Rain Water Harvesting** piping gathers 273,000 gallons of rainwater from the roofs.
- **Condensation** of 13,000 gallons of water from the air handler system will collect during summer months.
Institutional and Ad Hoc Districts of the City
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center
Districts: Institutional: Providence Portland Medical Center

Infiltrate 100% of the 100 year storm event
Use well water to irrigate and suppress fires
Districts: Ad-Hoc: Lloyd District
Districts: Ad-Hoc: Lloyd District
Redevelopment Catalyst

Districts: Ad-Hoc: Lloyd District
Districts: Ad-Hoc: Lloyd District

Redevelopment Catalyst
Redevelopment Catalyst

Districts: Ad-Hoc: Lloyd District
Redevelopment Catalyst
Redevelopment Catalyst
Redevelopment Catalyst

Districts: Ad-Hoc: Lloyd District
Redevelopment Catalyst
Redevelopment Catalyst

Districts: Ad-Hoc: Lloyd District
Redevelopment Catalyst

Districts: Ad-Hoc: Lloyd District
Districts: Ad-Hoc: Lloyd District

Redevelopment Catalyst
Intermodal Transit and Social Connections

Districts: Ad-Hoc: Lloyd District
Districts: Ad-Hoc: Lloyd District

A Green District

Social
Green Street Flow-Through Planters
Vegetated Roofs and Walls
Districts: Ad-Hoc: Lloyd District

A Mix of 24/7 Uses
Open Space and Habitat Corridors

Districts: Ad-Hoc: Lloyd District
Purple Pipe Non-Potable Reuse System
District Thermal Energy

ANAEROBIC DIGESTER

Districts: Ad-Hoc: Lloyd District
Districts: Ad-Hoc: Lloyd District
Headquarter Hotel – Receptacle for and Leader of EcoDistrict
Districts: Ad-Hoc: Lloyd District

District Wide Systems
High Performance

Four Wind Turbines produce 10–12,000 kWh of electricity per year. Monitoring of wind conditions and turbine performance will improve knowledge for future projects.

Solar Thermal panels heat 24% of hot water used in the building, offsetting natural gas use.

Roof Gardens clean, detain and filter rainwater and significantly reduce roof temperatures in warmer months.

Low-e Glass admits 55% of visible sunlight but reflects 70% of the associated heat, reducing energy use for lighting and space cooling.

Rainwater Re-use in toilet flushing on the office floors, and to irrigate the green roofs, reduces use of city water by 286,000 gallons per year.

Water-efficient Plumbing Fixtures help reduce water use by more than 44%.

Operable Windows provide occupants fresh air, cooling, and a connection to the outdoors.

Daylight Sensors switch off electric lights when there is ample daylight, reducing lighting energy use by 60%.

Exposed Concrete moderates indoor air temperatures. Mass is cooled with cool night air in the summer months and absorbs excess heat throughout the day.

Passive / Chilled Beams provide energy-efficient cooling on the hottest days.

Under-Floor Air Distribution efficiently delivers moderate-temperature air directly to occupants. Personal adjustable floor vents provide control over ventilation.

Water Storage Tank temporarily stores up to 22,000 gallons of rainwater and condensation for re-use.

Efficient Central Cooling plant in the nearby Brewery Blocks provides chilled water for space cooling.

Rain Water Harvesting piping gathers 273,000 gallons of rainwater from the roofs.

Condensation of 13,000 gallons of water from the air handler system will collect during summer months.
## Comparison

<table>
<thead>
<tr>
<th></th>
<th>Lloyd</th>
<th>PPMC</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connect</strong></td>
<td></td>
<td></td>
<td>Vehicle Miles Traveled</td>
</tr>
<tr>
<td></td>
<td>-29%</td>
<td>-20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td><strong>Complement</strong></td>
<td></td>
<td></td>
<td>Modal Split- Non SOV</td>
</tr>
<tr>
<td>Connect</td>
<td>1.5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>124/80</td>
<td>20/124</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Acceptance</td>
<td>Acceptance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clean</strong></td>
<td></td>
<td></td>
<td>FAR</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>80%</td>
<td>Residents / jobs per acre</td>
</tr>
<tr>
<td><strong>Conserve</strong></td>
<td></td>
<td></td>
<td>% of sf walkable services</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>10%</td>
<td>Fit or Juxtaposition</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>30%?</td>
<td>2030 Challenge</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>20%?</td>
<td>potable water use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>waste tons per square foot of building area</td>
</tr>
</tbody>
</table>