Solar Charge Station for Hayden Island

A bike/car sharing proposal using existing operators

INTRODUCTION

A solar-powered, electric charge station is proposed for Hayden Island. This proposal utilizes cars and bikes owned by individuals who make their vehicles available for sharing. The non-profit 501(c)3 venture would be self-sustaining through user fees.

Two car sharing services (Getaround Portland and Turo), provide both owners and users with established policies, procedures and insurance for car sharing. Spinlister is also utilized to provide similar service for bikes.

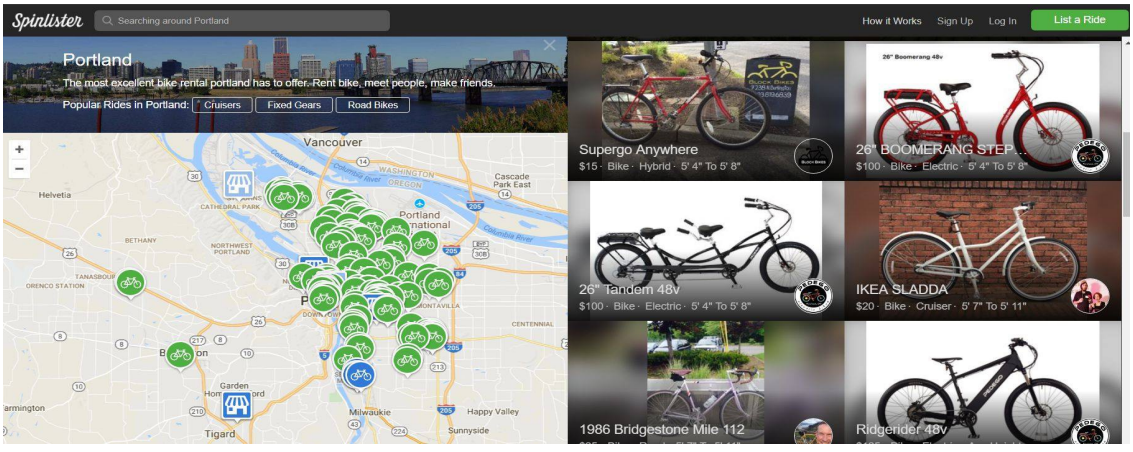
The solar hub provides a central location for car and bike sharing, making it more convenient for renters. The solar canopy doubles as an emergency power and communications backup for the city and state in the event of a large earthquake.

This is a first draft, intended to elicit responses and comments. After feedback a more formal process to define objectives, budgets and procedures would be created.

NEED

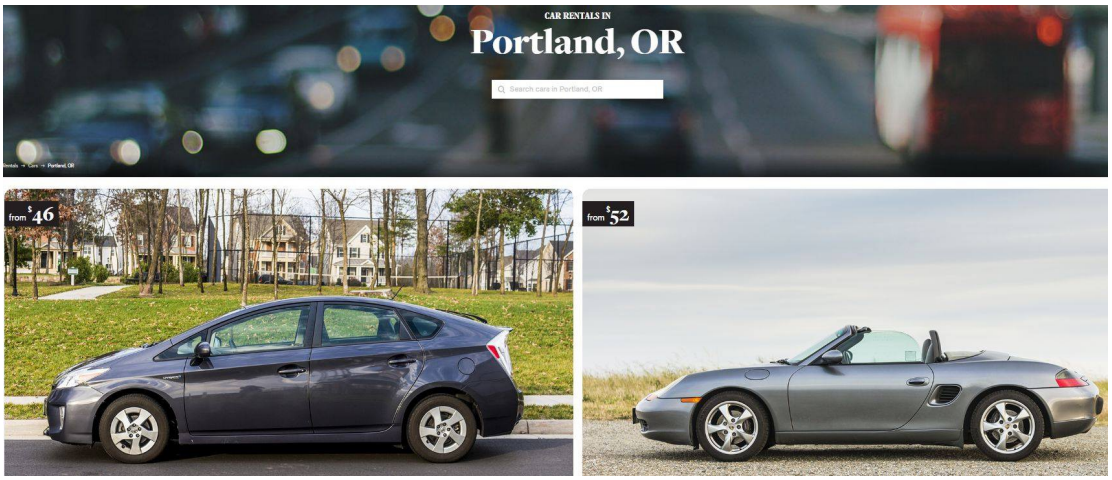
Hayden Island, Portland's only island community, links Oregon and Washington together and brings in 10,000 people daily to the Jantzen Beach Shopping Center. It is not served by Max train. The solar hub would provide ride-share services for bikes and electric cars for both visitors and the 2,500 residents, many of whom live on boats, floating homes and manufactured homes.

The interstate bridge, which travels across Hayden Island, is expected to collapse after a 7.0 earthquake. This charge station would provide emergency power, live cameras, and internet connections when gasoline for electric generators is gone.



It utilizes both car and bike sharing services. Individuals share access to their personal cars or bikes using Getaround Portland and Turo (for automobiles) and Spinlister (for bikes). It lets individuals from all walks of life earn an income.

Currently many residents in the lower income Manufactured Home community (with over 440 units) have no cars. Residents with cars often find congestion on I-5 untenable and move out.



Bike sharing allows residents to commute to the Yellow Max line at the Expo Center and reduce congestion. Residents without cars could have access to vehicles.

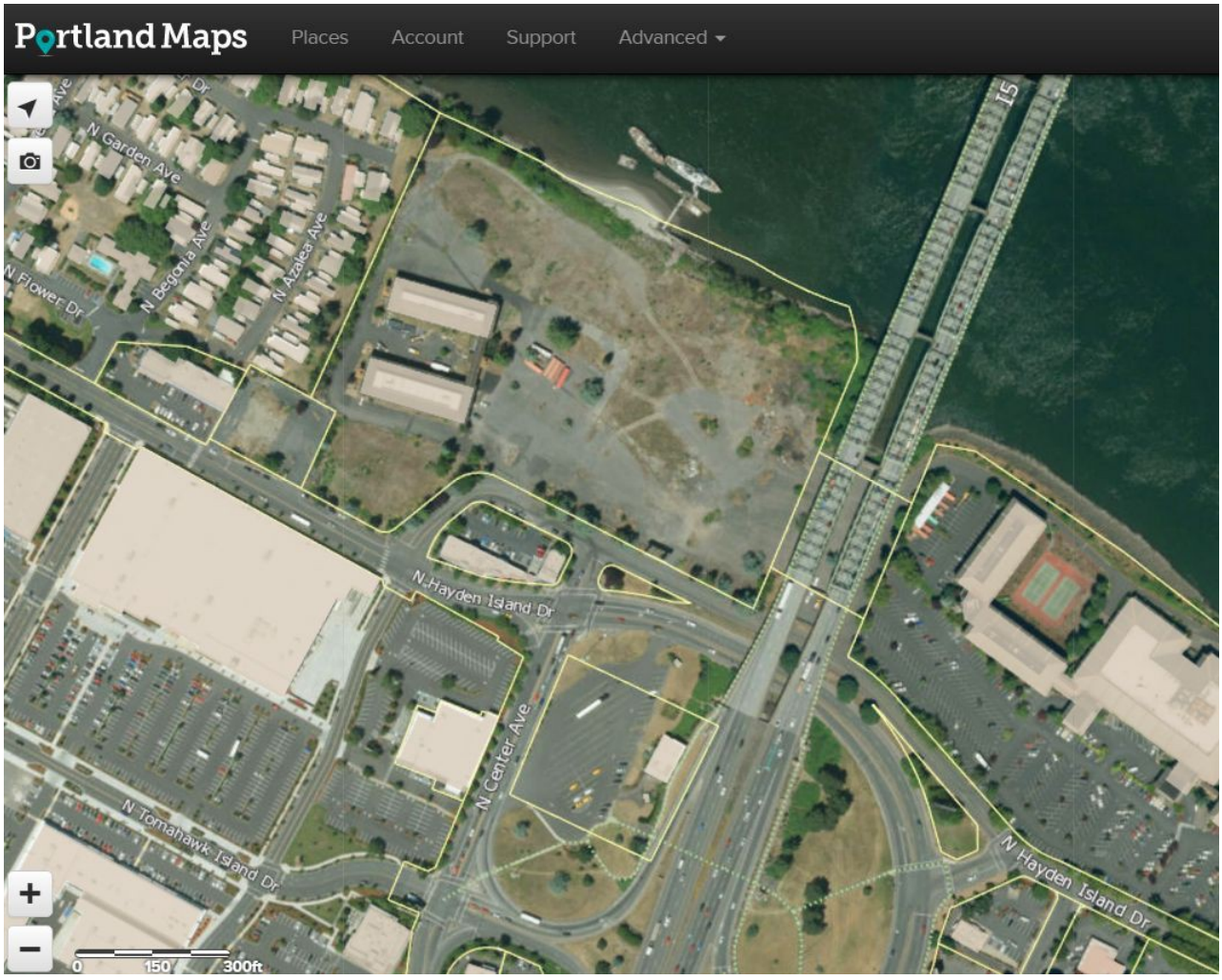
SOLAR CARPORT

The centralized solar hub provides 8.2 kW of solar power, 24/7 live cameras, and free WiFi. Modeled after OMSI's charge station for electric cars and bikes, it provides 8.2 kW of solar power and (perhaps) a 13.5 kw/hr Tesla Powerwall 2. It would provide power for 110 volt AC, usb charging ports, and Level 2 (240V) plugs for electric cars.

A Kiosk provides permanent outdoor signage with changeable QR codes to link your smartphone to the Getaround, Turo and Spinlister websites. That's where renters and rentees transact business. The solar hub's free WiFi can also take you to the charge station website.

Depending on location (on or near the Columbia) the charging hub may also show a live map of Marine Traffic on the Columbia, a live map of vehicular traffic on I-5, or a live map of aircraft traffic from PDX.

LOCATION
Two sites are proposed in this initial paper. One proposed location would be in the ODOT parking lot at the base of the Interstate Bridge (on the Oregon side).



Another location may be immediately West of the I-5 bridge, overlooking the river (currently open space). Astoria's Maritime Memorial Park, next to the Astoria-Megler Bridge, is a model for this space. A large kiosk which would show a live map of Marine Traffic on the Columbia, vehicular traffic on I-5 or aircraft traffic from PDX.

THE ELECTRIC BIKE COMPONENT

Entrepreneurs would supply and maintain their own bikes. Each person can set their own rates. Bikes could be tracked and lock combinations could be sent to phones. Ride to the Yellow line Max train at the Expo Center. A second e-bike station at the Expo Center would whisk you back home. No waiting. No congestion.

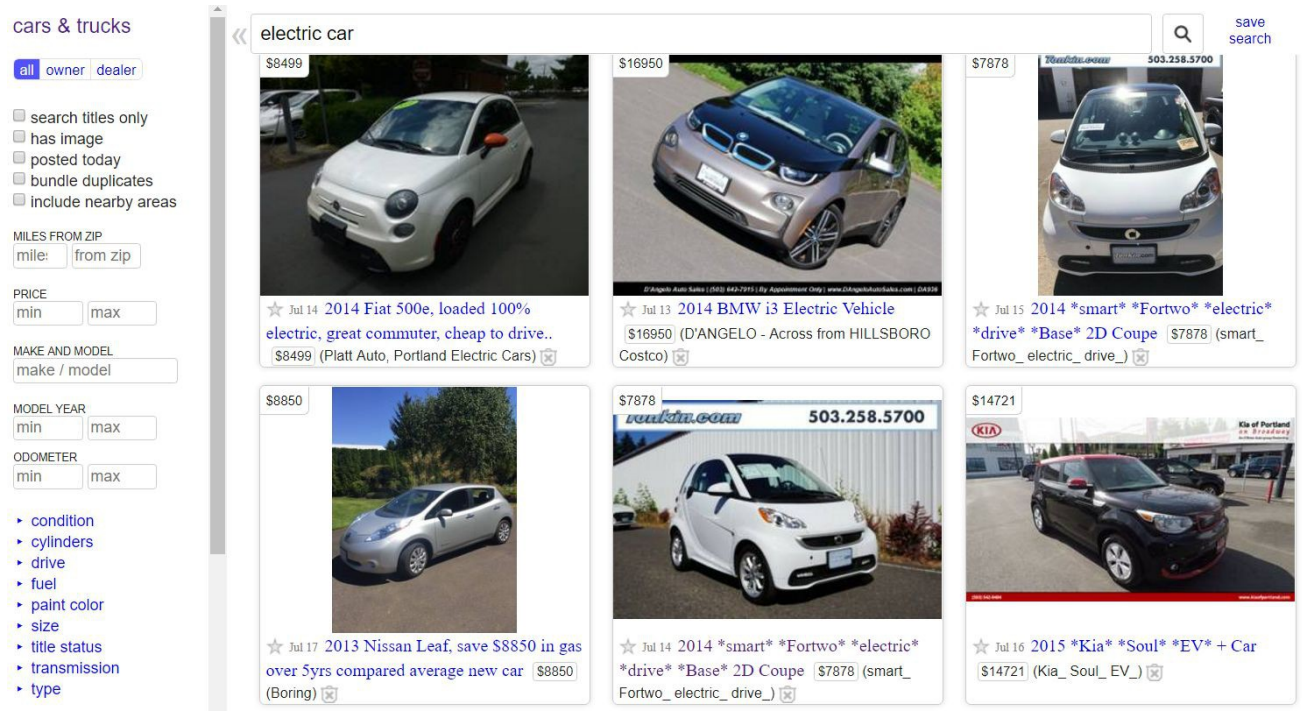
A solar-powered, electric bike recharge station could be just the ticket for island residents. The Lattis Smart Bike Lock, with built-in GPS, lets you share the combination and change it anytime. Anyone could securely place their own bike in a bike rental rack.

Sobi charges only $1 for 15 minutes of riding on their electric bikes. Similar e-bike rates could apply in Portland. Users get a $1 credit if they return the bike to a designated spot and are charged an extra $1 if they don't. Perhaps the first 15 minutes of electric bike use could be free on Hayden Island.

A $1 fee might be imposed if you leave it at the Yellow Max line after taking it from the Hayden Island hub. A $1 credit provides an incentive for anyone at the Yellow Max line (at the Expo Center) to ride it back to Hayden Island. That would tend to even out the bike distribution…and commuters may get their ride free (even make $1).

THE ELECTRIC VEHICLE COMPONENT

Like bikes, individuals and entrepreneurs would supply vehicles for rent at the solar canopy. The solar powered canopy provides power for live cameras, WiFi connections and even a consumer satellite data link using the latest HughesNet Jupiter 2 internet satellite which provides internet access even if cellular or land lines are inoperative.



We envision a mix of electric and gas vehicles. The electric Smart 2 Go, Nissan Leaf, Chevy Bolt and Volt, and others may be supplied by both individuals and business who see a profit in providing a shared ride service.

MANAGEMENT
Owners and renters of cars or bikes use car share applications to conduct their business. Turo and GetAround run the vehicle sharing operation. Consequently, management is simplified greatly. The main responsibility of the 501(c)3 operator of the solar canopy is to generate enough self-sustaining space rent to maintain reliable operation.

How much revenue must be generated a month to provide an "umbrella" organization so indivuals could benefit and prosper? That is not clear. One goal might be self-sustaining operation by year 2-3. If we target an income of $400/month per solar canopy, with space for 4 cars and 4 bikes, then that generates about $4800/year.

If the charge for bike parking is $25/mo per bike ($100/mo) and $75/month for car parking ($300/month), then that goal might be achieved. Revenue at $20/day x 15 days would be $300.

Bike demand may moderate in the winter, but congestion is a constant problem, so the benefit of getting to the Yellow Max Line at the Expo Center will be a constant. In addition, a 160 room Marriott, Hotel Indigo and Hyatt Place will start construction soon, bringing 400 new hotel rooms within walking distance from Hayden Island. Waterfront Vancouver is a major 1.5 billion development opening next year.

FUNDING
Pacific Power is offering funds for clean energy projects that serve communities. The funding comes from the utility's Blue Sky program, which has provided $10 million for clean energy projects since 2006. PGE's energy programs and Bonneville renewable programs also offer funding for a variety of community solar projects.

Bike sharing demand is strong. BikeTownPdx has averaged .93 trips per bike per day in year one. At $10/day x 15 days, that's $150/mo. At $30/day per car x 15 days that's $450.

SUMMARY
This draft proposal for a solar charge station on Hayden Island would benefit residents and visitors as well as owners of cars and bikes that want to earn a little extra money by renting out their car or bike at a convenient, safe and secure, centralized location.

The goal of this 501(c)3 operation is to reduce congestion, provide efficent transportation services and emergency backup power with internet service in the event of an earthquake. It delivers a simplified approach to management and enables all members of society to benefit for efficent shared transportation infrastructure.

(pdf link to this paper, below)
http://www.hayden-island.com/wp-content/uploads/2017/07/Hayden_Island_solar_canopy.pdf

LINKS AND RESOURCES:

Bike and Car sharing services

https://www.biketownpdx.com/
https://www.spinlister.com
https://turo.com/list-your-car
https://www.getaround.com/portland

OMSI's solar-powered charging canopy

https://www.bizjournals.com/portland/blog/sbo/2010/07/omsi_debuts_solar-powered_charging_canopy.html
https://bikeportland.org/2010/07/30/now-you-can-charge-your-e-bike-at-omsi-37243
http://eastpdxnews.com/general-news-features/new-omsi-%E2%80%98solar-canopy%E2%80%99-powers-cars-bikes/
https://www.tesla.com/energy
https://en.wikipedia.org/wiki/Tesla_Powerwall

Live maps for Columbia River Kiosk

https://www.marinetraffic.com/en/ais/details/ports/21657/USA_port:VANCOUVER
https://tripcheck.com/SpeedMap/SpeedMap.htm
https://flightaware.com/live/airport/KPDX
http://www.columbian.com/news/2017/jul/02/can-a-trio-of-hotels-coexist-in-downtown-vancoiuver/
https://bikeportland.org/2017/07/14/biketown-celebrates-one-year-of-service-this-week-234922

About the author:
Sam Churchill is a writer and researcher in the fields of cellular communications systems, green energy, autonomous vehicles and drones.

Sam Churchill (schurchill@gmail.com)
12451 North Westshore, Hayden Island
Portland, OR 97217 Ph: 503.740.9209
http://www.hayden-island.com
http://www.hayden-island.net
http://www.hayden-island.com/biking/
http://www.hayden-island.com/free-wifi/
http://www.hayden-island.com/self-driving-car-proposal/
https://portlandgreenenergy.wordpress.com/

POTENTIAL PARTNERS ADDENDUM:

CITY OF PORTLAND

1. Portland Bureau of Transportation
https://www.portlandoregon.gov/transportation/
2. Portland Bureau of Planning and Sustainability
https://www.portlandoregon.gov/bps/
3. Portland Bureau of Emergency Management
https://www.portlandoregon.gov/pbem/

CITY/STATE AGENCIES

1. TriMet
https://trimet.org/sustainability/
2. Metro
http://www.oregonmetro.gov/
3. Port of Portland
http://www2.portofportland.com/
4. Oregon Dept of Transportation
http://www.oregon.gov/ODOT/pages/index.aspx
5. Oregon Department of Energy
http://www.oregon.gov/energy/at-work/pages/energy-incentive-programs.aspx
6. US Dept of Energy
https://energy.gov/savings/business-energy-investment-tax-credit-itc

UTILITIES

1. Portland General Electric
http://www.pgefoundation.org/
2. Pacific Power
https://www.pacificpower.net/env/bsre.html
3. Clark Public Utilities
https://www.clarkpublicutilities.com/
3. Bonneville Power
https://www.bpa.gov/Projects/Initiatives/solar

CAR AND BIKE SHARING

1. Bike Town
https://www.biketownpdx.com/
2. Spinlister
https://www.spinlister.com
3. Turo
https://turo.com/list-your-car
4. Get Around
https://www.getaround.com/portland
5. Car2Go
https://www.car2go.com/US/en/portland/
6. ReachNow
https://reachnow.com/en/portland-or/
7. Uber
https://www.uber.com/
8. Lyft
https://www.lyft.com/cities/portland-or

FUNDING
1. Portland General Electric
http://www.pgefoundation.org/
2. Pacific Power
http://www.b-e-f.org/
3. Energy Trust of Oregon
https://www.energytrust.org/
4. Forth Mobility (Drive Oregon)
https://forthmobility.org/
5. Prosper Portland (PDC)
http://prosperportland.us/
6. Murdock Foundation
http://murdocktrust.org/
7. Meyer Memorial Trust
https://mmt.org/

INDUSTRY ORGS
1. Solar Oregon
http://solaroregon.org/resources/
2. Oregon Solar Energy Industries Association
http://www.oseia.org/
3. Oregon Electric Vehicle Association
http://oeva.org/
4. IBEW Local 48
https://www.ibew48.com/

BUSINESSES
1. Charge Point
http://www.chargepoint.com/
2. Cynergy E-Bikes
http://www.cynergyebikes.com/
3. Genze Electric Bikes
http://www.genze.com/
4. Nissan USA
https://www.nissanusa.com/
5. Platt Auto Group
http://www.plattauto.com/cars-browserEV
6 EV 4 Oregon
http://ev4.website/
7. EV Go
https://www.evgo.com/
8. Solar World
https://www.solarworld-usa.com/
9. Sanyo US
http://www.us.sanyo.com/Business-Units

ENGINEERING FIRMS
1. Livermore Architecture & Engineering
http://www.livermoreae.com/portfolio_1349969562/omsi-solar-canopy/
2. InSpec Group
http://www.inspecgroup.com/index.php/projects/projects_energy_solutions/
3. OSU Energy Systems Group
http://eecs.oregonstate.edu/energy-systems