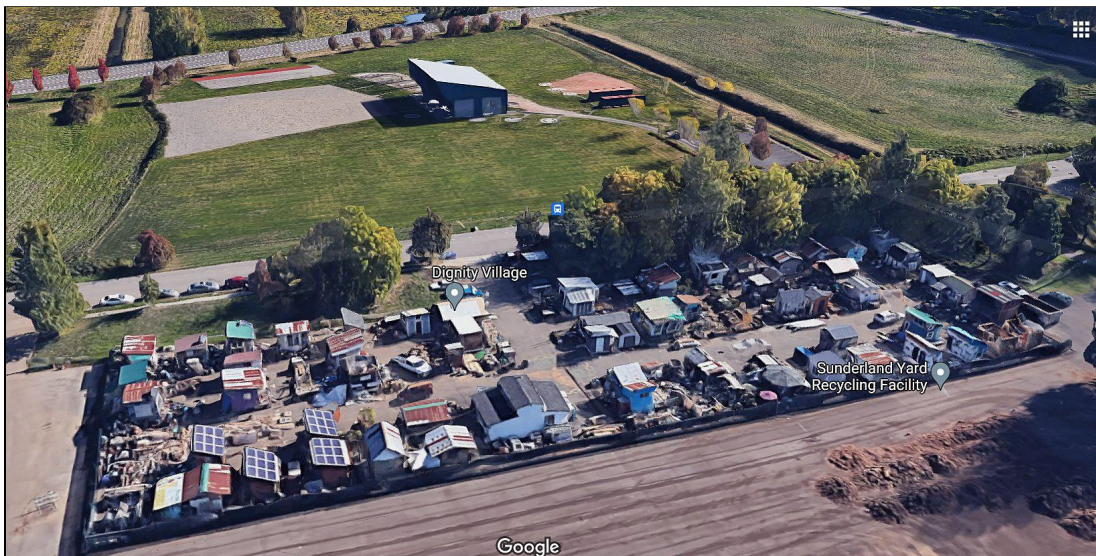


Portland Clean Energy **DRAFT** Grant Proposal

Solar Backup Power for Dignity Village and PBEM

INTRODUCTION:

This proposal targets low-income residents and first responders with a large solar charge station near Dignity Village using Portland Clean Energy Funds. The goal is to serve Dignity Village with “free” solar power for showers, laundry facilities, and communications, WHILE providing 100-200 Kw/hours of backup battery power for the Portland Bureau of Emergency Management.



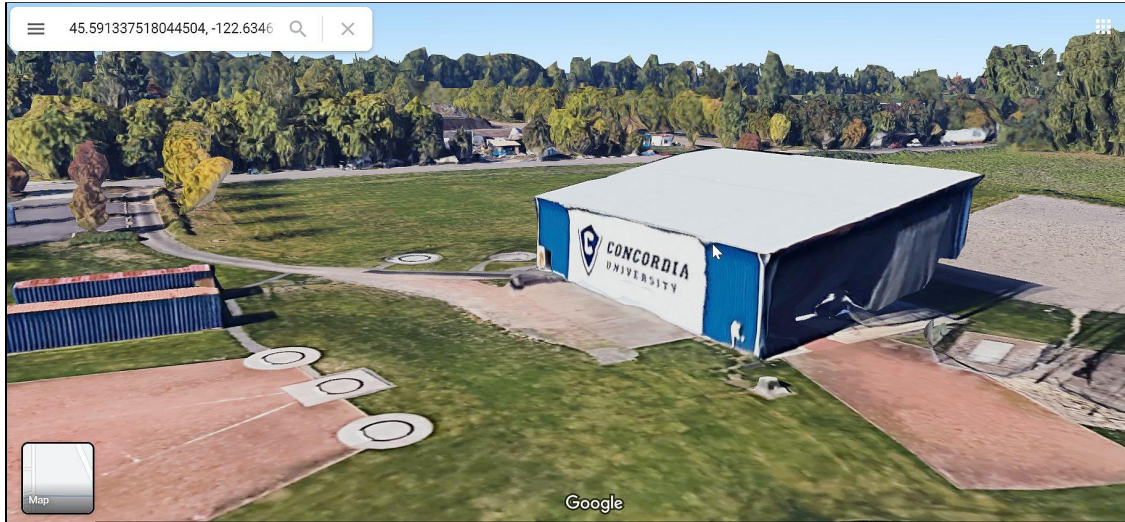
NEEDS:

Dignity Village currently uses propane to heat water for showers and laundry, so solar generated electricity would reduce their operating costs. PBEM requires power to maintain communications and community services after an emergency. Gasoline for generators after a subduction zone earthquake may be in short supply for months.

Electric Vehicles, equipped with 60-200 Kw/hr batteries, can supply hundreds of kilowatt hours “free”, everyday, when recharged by the sun. The goal is to improve quality of life, provide jobs and power in an emergency. This model can also be applied to a variety of neighborhoods for emergency power & charging.

FUNCTIONAL DESCRIPTION:

A 20Kw solar array is mounted on the roof of Concordia College's Throw Center on NE 33rd. The array charges City of Portland EVs and electric school buses. Buses may have more than 220 KWatt/hr batteries.

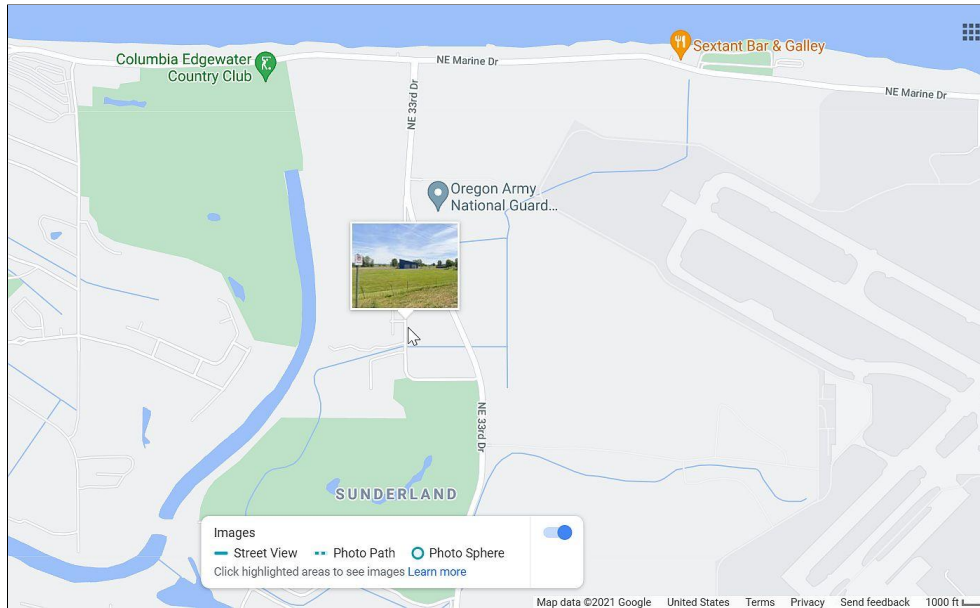


Approximately 100 feet to the west of the Throw Center is [Dignity Village](#). A 50 amp, 220 Volt drop is run to the Dignity Village common area, showers and laundry.



Electricity is supplied by Pacific Power. A utility pedestal is already installed and operational at the throw center. Excess energy generated from the solar array is purchased by Pacific Power at the going rate.

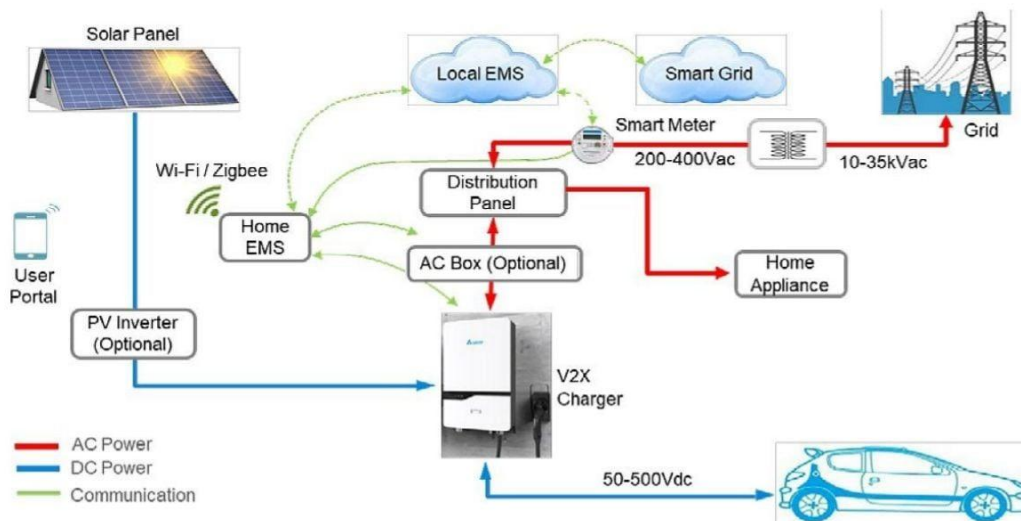
The area is on NE 33rd, close to the PDX main runway, the Oregon Foodbank, and the National Guard. It's south of Marine Dr. and close to Jubitz truck center.



The 20KWatt solar array feed would pass through the appropriate electrical safety switches and inverters to deliver power to several Level 2, bi-directional charging stations.

BI-DIRECTIONAL CHARGERS

Level 2 chargers, that output 220 volts, are designed to charge AND receive power from the vehicle.



Vehicles capable of bi-directional charging can use either CHADEMO and CSS charge ports. The vehicle's own 60-100 Kilowatt/hr battery PROVIDES emergency battery backup. And it's mobile. The 20 KW array may generate 100 KW daily (20KW x 5 hours). That's enough power to run an RV for weeks. My 34 foot RV typically consumes about 300 Kwh a month (10 Kw/hrs daily).

[VW's new 22 kW bi-directional DC charging station](#) for electric vehicles closes the gap between level 2 charging and level 3 DC fast-charging (which is expensive). Unlike 220 Volt AC Level 2 charging, VW uses DC, so vehicles don't need on-board AC rectifiers that limit charging capacity. It also provides power to the grid or home. VW's inexpensive wallbox charger can charge electric cars at up to 22 kilowatts. [It can also draw power from its battery, allowing cars to serve as energy-storage units for homes](#), or as battery buffers for the grid.

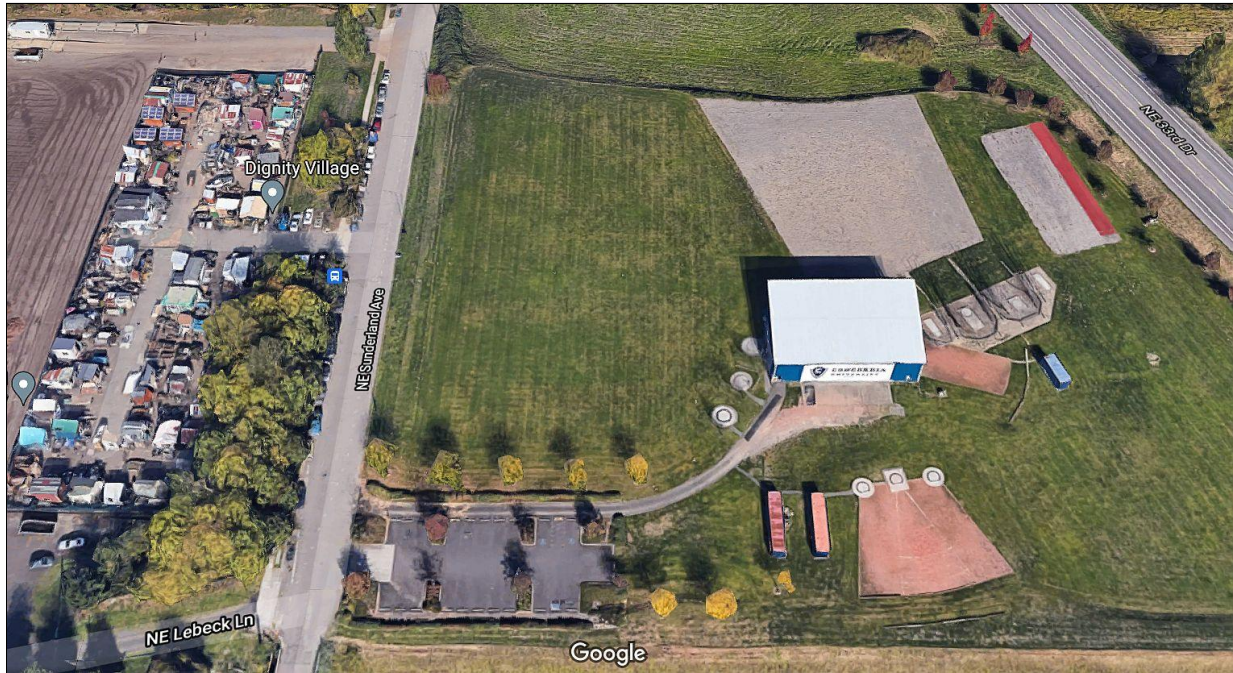


[The Nuvve Powerport AC charging station](#) delivers up to 100kW of power in three-phase configuration and 19kW of power in single phase configuration in a compact size package (wall mount or with pedestal). It's certified to UL safety standards, is the first-ever NRTL-certified AC V2G charger, and is ENERGY STAR certified.

A combination of solar and grid power would be used to charge vehicles. A charge rate of 20 kWatts would likely charge most vehicles in 3-5 hours or less.

LOCATION:

Concordia College leased the property from the Port of Portland, but went bankrupt two years ago. Their Throw Center, built for Olympic-style training, is adjacent to Dignity Village on NE 33rd. This proposal would depend on the availability of this space and facility. The status of this facility is currently under review.



COSTS:

How much would it cost? SAVING money is the objective. We are NOT spending any money on batteries. V2G and Level 2 chargers make that possible. It saves money on propane costs for Dignity Village. It provides broadband communications for both Dignity Village and PBEM via 150 Mbps Starlink satellite connection. It saves schools, the city of Portland and PBEM money by providing a solar charge station that is “free”. From the sun.

I do not have an accurate cost estimate of items in this proposal. This is just a first concept draft. I’d like to bring it in for under \$200,000. I think that’s possible.

But there are lots of unknowns, including availability of property and a buy-in from the principal partners particularly Dignity Village, PBEM, Port of Portland and Pacific Power, among others.

Here’s a rough draft budget:

1. Solar panels with installation (20Kwatts)	\$60,000
2. Inverters with power to drive chargers	\$ 3,000
3. Two, Level 2 chargers (220 Volt, 50 amp)	\$ 3,000
4. Two, Level 2 chargers (22 KW)	\$ 7,000
5. V2G interface to Pacific Power (two way)	\$ 7,000
6. 100 feet of 220 Volt power trench to D.V.	\$10,000
7. Misc.	<u>\$10,000</u>
8. TOTAL	\$100,000

SUMMARY

A LOT can be accomplished with a \$100K Portland Green Energy Fund grant. How would YOU spend \$100K to create a "green energy" infrastructure, while building community and creating jobs?

I'm anxious to get your feedback. Is this a viable concept?

- Sam Churchill (schurchill@gmail.com)

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For further information:

1. Portland Green Energy Fund

<https://portlandcleanenergyfund.org>

2. Pacific Power Electric Vehicles Charging Fund

<https://www.pacificpower.net/savings-energy-choices/electric-vehicles/charging-station-grants.html>

3. PGE'S Electric School Bus Fund

<https://portlandgeneral.com/energy-choices/electric-vehicles-charging/pge-electric-school-bus-fund>

4. Daimler's Truck Oriented Charge Station

<https://portlandgeneral.com/news/2021-04-21-daimler-portland-general-electric-open-electric-charging-site>

5. City-wide Sustainability Charge Stations

<https://www.hayden-island.com/sustainabilitynet/>



WHO: *Portland Clean Energy Fund* is a ballot initiative that was passed in 2018. It funds green energy programs that will benefit low-income residents and communities of color.

WHAT: The *Clean Energy Fund* collects some \$40-\$60m annually, raised by a 1% business tax on largest 1% (retail with over \$1 billion annual revenue). Food, utilities & small business <\$500K in Portland not taxed.

WHERE: Grants will install solar, weatherize homes provide job training & expand local food production.

WHEN: The FIRST grant proposals will be announced Feb 2021, totaling \$8.6 million.

WHY: Black, Indigenous, and people of color are most impacted by climate change but have been excluded from the emerging low-carbon economy