

ODOT's

“World's Largest Solar Highway”

Oregon Energy Siting Council

All active members received these documents

Why Solar Highway is BAD for West Linn and Oregon

Concerned Citizens of West Linn and Oregon City, Oregon

June 9, 2010

Oregon Energy Planning Council

All Active Members received copies of these documents.

Thousands of citizens in West Linn and Oregon City are concerned with various aspects of ODOT's putative "World's Largest Solar Highway". It would be an industrial power plant inside a city and unlike anywhere else in the world. Here are 7 key aspects that concern our citizens. A short background is attached to expand on what is below:

1) **NO Cost-Benefit:** \$20m with no payback in a state with financial problems; all the dollars come from the taxpayers via BETC's and other federal tax credits to PGE! Is this the best and highest use of scarce Oregonian taxpayer dollars given our budget problems?

2) **Cost-Effective Alternatives:** Virticus (www.virticus.com) can save 30% via software and sensors on 10,000 street lights for \$2m vs. generating power for a couple of hundred street lights for \$20m; in Israel they put piezoelectric mats under roads to generate 1 MW/kilometer. Why doesn't ODOT consider electricity savings with a hugely positive ROI instead of generating it from a different source with no reduction in usage?

3) **Fire Dangers:** HUGE to most of West Linn as embers can travel over a mile to ignite new fires; NO fire plan by ODOT or TVFR or the city (even DOE has an Model Ordinance recommending this) when specifically asked — the proposed trail is even worse as humans cause >90% of fires. This ignores the crime that will come with a trail with no lighting, police access and many places to run and hide. Why is there no requirement for a Fire Protection Plan and a bond or letter of credit to protect the city and residents from this fire hazard?

4) **Earthquake+Landslide:** Hillside is very unstable and many crustal faults in WL; see DOGAMI map IMS-29 at <http://www.oregongeology.org/pubs/ims/p-ims-029.htm>. WHAT provisions will ODOT make to mitigate slide and earthquake damage to the hillside that can/will affect homeowners above the power plant?

5) **Decommissioning:** NO provisions from ODOT or PGE when specifically asked to provide details. Why are ODOT and PGE not required to provide a bond or letter of credit to protect local government and the state from having to pay to restore energy-generating plants as required by the Oregon Energy Facility Siting Council?

6) **Categorical Exclusion+R-10 zoning:** Like the BP oil rig in the gulf, ODOT wants to avoid assessing environmental impacts on 3+ wetlands and 9 federal and state sensitive species on the land—as determined by 14 years of recorded observations by a PhD Biologist living on the land: Rick Mishaga, thrush-1@comcast.net. What is ODOT's plan to study across seasons, these animals' habitats, living habitats, travel between other wildlife habitats (Camassia and Savannah Oaks), etc.?

7) **NO Tangible Benefits to West Linn:** There are no specific West Linn or ODOT or State benefits from this project. Benefits that meet financial rationality, energy

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- + **Financial infeasibility** – ODOT+PGE est. \$20mm to build, 50% with Oregon BETC tax credits, 30% with Federal credits, 20% other incentives. ODOT says over 100 years to Payback—Oregon taxpayers must replace these state funds. State of Oregon in fiscal distress. West Linn will own nothing, get no energy cost reduction, nor have control over operation or shutdown—no tangible benefits to the city; benefits all go to ODOT and PGE. PGE is not even paying rent to the state for PGE's power plant on state property. Is this good use of scarce funds? What are the hidden expenses for West Linn residents, for example, additional police fees, solar trail maintenance fees, lighting, irrigation, etc.? Will West Linn be stuck with the bill if/when PGE/ODOT abandon the project? IF West Linn were given \$20m would it invest it in this project? Would West Linn put this plant in Willamette Park which is more stable and would require fewer trees be removed?
- + **Health/Medical** – solar panels and inverters are made from extremely toxic materials: lead, polybrominated biphenols, hexavalent chromium, cadmium telluride, gallium arsenide to name a few. With over 13,000 panels planned what is their MTBF (meant time between failure)? In certain failures toxic chemicals can leak from rain runoff. This leakage poisons the ground, the runoff, local plants, and animals. As the poisons run to the Willamette River will people, esp. children, be affected? What happens if the solar panels out-gas over time? What chemicals or toxins do the solar panels give off if caught in a fire?
- + **Conservation Alternative** –BHTNA supplied ODOT and West Linn with a conservation alternative, see www.virticus.com. Virticus is a local company that sells software and sensors for existing streetlights. Virticus estimates they can save ODOT roughly 30% of its electricity usage in 10,000 street lights for about 1/10 the cost of the solar power plant, which will service fewer than 1,000 streetlights. Why does ODOT not consider electricity savings with a hugely positive ROI instead of generating it from a different source with no reduction in usage?
- + **Trail System** – Some West Linn city officials want a wide trail alongside the power plant, thus, increased people increases fire hazard (90% wildfires due to people), increases crime, increases traffic, increases litter, decreases wildlife habitability, decreases neighborhoods' security from Sunset Drive to Salamo Road, no

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emergency or police access from hilltop. What is the fire protection plan for the Barrington and Tannler neighborhoods? What police and ambulance access and rescue plans are developed? Should ODOT and PGE put up a bond for fire protection of these neighborhoods and the rest of West Linn within 1.5 miles of the hillside? What will trail construction cost? What is the most WL will pay for a trail? What would be the maintenance costs of any trail?

- + **Fire Danger** – likely unstoppable fire chute up the hillside; 2003 fire was ODOT-caused. NO emergency access from hilltop to fight fire from the top/front; the only access is from the rear/downhill of the fire. Any fire could spread to Savannah Oaks and Camassia Parks. A 1.5-mile radius of blown embers causing more fires (from 3500 Riverknoll Way: north to Apollo Rd WL; east to 4th St Ore. City and River St in WL; west to 19th St WL) is likely. People cause 90% of all wildfires—the trail is a fire hazard, too. Why doesn't West Linn and/or the state require a Fire Protection Plan and a bond or letter of credit to protect the city from this fire hazard? (See second letter, dated October 1, 2009, from DFM Duyck of TVFR regarding the lack of any scientific basis for TVFR's first letter.)
- + **Firefighter hazard** – when the sun is out the solar panels hold about 600 volts, even if disconnected from the grid. There are as yet no standards or mechanisms to protect firefighters when they fight fires around this type of huge industrial power plant. A Target store burned 4/09 in Bakersfield, CA when firefighters were unable to adequately fight the fire due to 600 V-charged solar panels on its rooftop (their electrical lines appear to have been the fire's source). What is the Fire Protection Plan for this hillside?
- + **Earthquake/slide hazard** – ODOT recognizes soil type and soil shifting (slide) hazards. What ODOT doesn't detail or even mention are the earthquake faults nearby and along the coast that could cause slides—especially if the plant cover/topography is severely reduced by ODOT's planned removal of 300+ trees. What provisions will ODOT make to mitigate slide and earthquake damage to the hillside that can/will affect the homeowners above the power plant?
- + **Crime** – the I-205 rest stop closed in '94 due to crime problems, ~12 ft wide trail will cause similar crimes due to easy access of over ~7000 feet of trail backing up to

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many homes' backyards (70 feet from rear property lines along Imperial Drive). No trail visibility from streets, no lighting, poor to or no access by police, and elevated people traffic will all help create the perfect opportunity for burglars/predators and hide criminal activities. In addition, the burglars/predators will have many easy hiding places and escape routes all along the solar trail, residents' backyards and neighborhoods with only 1 jurisdiction – WL police, etc. [Per WL Police Captain: >60% of all arrests in WL are not WL residents—a trail will surely increase this.] What is the plan to keep crime from recurring on this trail and around the power plant?

- + **Decommissioning** – there are no known provisions for closing the site down and remediating the habitat. The hardware is good for 25 to 30 years, what happens then? Who is responsible? None of the key vendors are known, by PGE, to have signed an *Extended Producer Responsibility* pledge to be environmentally responsible recyclers/re-users of the very toxic materials used in solar panels. Solar World, likely panel manufacturer according to PGE, has a crystalline photovoltaic recycling plant—in Germany. How likely is it that, in 25 to 30 years, >13,000 panels each ~4' x 6' will be shipped 5,000+ miles from Oregon to Freiberg, Germany, to be recycled?
- + **Oregon's Energy Facility Siting Council** requires companies to have a bond or letter of credit to protect the local government and the state from having to pay to restore energy-generating plant sites. (The state's draft suggestions for counties considering renewable energy projects, a bond or some form of credit is recommended as well.) Since the city has regulatory authority over the ODOT property, per Mr. Tim Ramis, WL city attorney, why does the city not require ODOT and PGE to protect West Linn in the case of panel failure, fire, site decommissioning and etc.? (See A MODEL ORDINANCE FOR ENERGY PROJECTS by Oregon Department of Energy)
- + **Threat to Wildlife and Several Connected Habitats** – Camassia Park, Savannah Oaks and Riverknoll Park are connected by the animals that move between and live in all these areas. The following species will be threatened:
 - *Haliaeetus leucocephalus*, Bald eagle, Delisted Federally Threatened Species.

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- *Falco peregrinus anatum*, American peregrine falcon, Delisted Federally Endangered Species.
 - *Patagioenas fasciata*, Band-tailed pigeon, Federal Species of Concern.
 - *Asio flammeus*, Short-eared owl, Audubon Watch List: Oregon birds critically imperiled State Critically Sensitive Species in the Willamette Valley.
 - *Melanerpes formicivorus*, Acorn woodpecker, Federal Species of Concern.
 - *Empidonax traillii brewsteri*, Little willow flycatcher, State Vulnerable Sensitive Species & Audubon Watch List: Oregon birds critically imperiled.
 - *Eremophila alpestris*, Horned lark, State Critically Sensitive Species in the Willamette Valley.
 - *Pooecetes gramineus affinis*, Oregon vesper sparrow, Federal Species of Concern and State Critically Sensitive Species.
 - *Sturnella neglecta*, Western meadowlark, State Critically Sensitive Species in the Willamette Valley.
 - *Sciurus griseus*, Western gray squirrel, State Potentially Sensitive Species: Status Undetermined.
- + **Categorical Exclusion** – ODOT is asking to be relieved from all environmental analysis, a Categorical Exclusion, except the paper study they did to justify the C.E. ODOT proposes no on-site, trans-seasonal studies of plant and animal living patterns that would properly assess the property. What is ODOT's plan to study, across seasons, these animals' habitats, living habits, travel between other wildlife habitats (Camassia and Savannah Oaks), etc.?
- + **Over 100 vertebrates** – live in the Camassia Park, Savannah Oaks Park and Riverknoll Park connected habitats. The trail will be egregiously bad for this wildlife and their habitats. The power plant will need, PGE estimates, about 1 million square feet of their habitat. The noise and vibrations generated by the dozen or more large DC to AC inverters will be detrimental to wildlife habitat. What is ODOT's plan to prevent damage to these animals' habitats?
- + **Landslide hazards/Kinton soils** – are known to be on the hillside and are very prone to erosion as can be seen on the hillside now. 5 ½ football fields of solar panels will rapidly and continuously sheet off voluminous amounts of water even in a light rain and where does it go? How is the power plant site engineered to prevent erosion? How is the solar trail engineered to prevent erosion? See DOGAMI map showing recent/active landslide activity exactly where the power plant is planned: <http://www.oregongeology.org/pubs/ims/p-ims-029.htm>. WHY was this map totally

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ignored by GeoDesign in their assessment of the site? Why did GeoDesign only make 3 inline borings while ignoring CH2M Hill's numerous other borings in making their assessment of the site? Why are the crustal faults riddling the area not included in GeoDesign's assessment of the site? (see West Linn's own Natural Hazard Mitigation Plan, 2004, for maps and ranking of concerns and high probability regarding earthquakes) Should not a "Susceptibility Study" be required on a site that has as many markers of historic and pre-historic landslides as this exact site has? *Recent quakes: March 23, 2010 in Portland, April 3, 2010 in Mexico, January 2010 in Haiti, February 2010 in Chile, etc.*

- + **Wetlands** – this project requires the covering over of X wetlands, one formed by a spring, covering Y square feet. Why are ODOT and PGE not being required to mitigate these wetland losses? Under CDC Chapter 60.090, why is the city not, right now, requiring an Environmental Impact Statement or an Environmental Assessment from ODOT and/or PGE?
- + **Health/Medical 2**– converting DC electricity to AC electricity by inverters creates high frequency electrical transients (wide fluctuations in voltage). These transients have been tightly correlated to much higher cancer (many types) rates in people living near them. These transients will go into the grid at the power line on Salamo Road and be distributed throughout West Linn and beyond. The transients dissipate very slowly over long distances and their low kilohertz frequencies easily enter the human body. What about wildlife living around these installations? Why is ODOT allowed to just submit a question to the Solar Energy Technologies Program at the U.S. Department of Energy for their review and then ignore the issue?
- + **Reflection** – the reflectance (frequencies and intensities) of the coversheets of glass over the solar panels are a major concern to *Oregon City* residents due to the directions and intensity of reflection throughout a day and over the course of a year. The Good Company's analysis seems to either be a guess, or, they know the exact arrangement and alignment of the solar panels after installation. In either case, is their calculation based on theoretical data calculations or actual measurements from identical panels?

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- + **Noise** – What should people within 200 yards radius expect to hear when there is heavy rain or hail on the ~13,000 solar panels?
- + **Irrigation** – Why is there no increase in drainage capacity to, under I-205 and beyond I-205 to the Willamette River to accommodate 5.5 football fields of rapidly shedding/sheeting water in even light rains? (This area flooded recently.)
- + **Soil stability** – the GeoDesign study seems to assess the site as it exists today, with only 3 in-line borings being the key assessment sites. Why is this study not a more predictive study, i.e., what will happen to soil percolation, stability, and absorption after over 1,000,000 square feet of solar panels and supporting infrastructure is installed?
- + **Traffic** –Riverknoll Way currently gets ~1200 cars/day. A trail, parking area and viewpoints will substantially increase this volume. What provisions is the city planning to take to ensure the livability for residents and the safety from criminal activity and increased traffic, in particular, for the children of the neighborhoods along Barrington Drive, Riverknoll Way, Beacon Hill and Imperial Drive?
- + **Zoning** – some of the ODOT land is zoned R-10 and, thus, requires all the attendant land use regulatory processes to be followed. ODOT wants a Categorical Exclusion from the Federal Highway Administration (FHWA) to avoid the Environmental Impact Statements (EIS) or Environmental Assessments (EA) most properties like this would be required to undergo. The Federal Highway Administration gets to decide this for ODOT without citizen input. Why do West Linn's planners suggest ways for ODOT to circumvent normal legal processes regarding the zoning on this land? Why does West Linn not require an EIS or EA on this project; it clearly, according to West Linn's city attorney, has the authority to require cogent study?
- + **Environmental Impact or Assessment Processes** – Citizens have not been allowed to participate at all to ensure the environmental impact processes are being followed. ODOT got to do a feasibility study, paying its own contractors (some of whom will get additional work if the plant goes forward) to assess a project it wants to build—this is like letting PGE decide if a coal plant is clean; they need oversight. What is West Linn doing to ensure environmental impact processes are occurring or

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being followed? Why does West Linn not require an EIS or EA on this project; it clearly, according to West Linn's city attorney, has the authority?

- + **Validation** – NO where else in the world have 5.5 football fields (1,000,000 square feet or 18+ acres for all of the power plant's real estate needs) of this type of solar panel been located so close to so many continuously occupied residential homes and near 2 elementary grade schools. West Linn is an experiment. Why are the city staff, Planning Department, and city council sanguine about this experiment?
- + **No specific West Linn or ODOT or State benefits from these 2 projects. Benefits that meet financial rationality, energy conservation that offset citizen safety, city fire hazards, city medical/health hazards, wildlife impacts, etc.** Can specific, tangible benefits to West Linn's residents be detailed?

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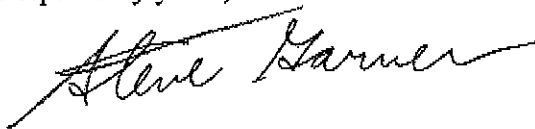
Representing several neighborhoods and thousands of voters.

conservation (see ROI of energy calculations), that offset citizen safety, city fire hazards, city medical/health hazards, wildlife impacts, etc. Can specific, tangible benefits to West Linn's residents be detailed by ODOT?

The recent events off the gulf coast increase our sense of urgency as we do not believe the safety of this project has been adequately addressed. We predict that when a disaster happens, the lack of planning will be accompanied by finger pointing between ODOT, PGE and the City of West Linn.

Please recommend this ODOT project be permanently cancelled.

Respectfully yours,



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