

Medium / Utility Scale Solar Energy Production Opportunity

[Preliminary / Confidential]

Rev. 6/02/10, bsc

Objective:

Creation of a utility scale solar production site using the old Masonite site just north of Ukiah, Mendocino County. The primary customer would be PG&E, with the electricity ultimately ending up employed by local entities and helping stabilize the local grid.

Why:

Local energy production is the next wave beyond local food production. It provides greater stability for the region, including security and price stability as well as the creation of local long-term jobs ["Green Collar Jobs", CleanTech's term]

More distributed / local energy production = recommendation of national panel following electrical grid crash (NE primarily) early part of this decade.

Solar energy, while needing to be balanced with other power sources (for when the sun isn't shining), is a low maintenance producer with a life time of over 25 years.

The property:

Approximately 76 acres which include Assessor Parcels 170-170-04, 12 and 13(5); 170-190-02, 03, 04, 05, 06, 09, 14 and 15 and generally bounded by Masonite Road on the north, State Highway 101 on the south, the Northwest Pacific Railroad (NWPRR) tracks on the east and North State Street on the west.

Site is owned by Diversified Developers Realty (DDR) who wanted to build a large mall on the property. County voters turned them down (DDR tried to bypass the county planning by going directly to the voters). Voters voted to keep the site zoned industrial. See <http://www.smartvoter.org/2009/11/03/ca/mnd/meas/A/> for more information on the initiative and the final vote.

The site has been cleared of structures, leaving only concrete pads (which could be left as foundations, drilled for solar supports).

Key = DDR is financially unstable and is unloading a lot of their holdings / properties.

DDR website: <http://www.ddr.com>

DDR SEC filing for September 2009: [http://www.facs.org/sec-filings/091023/DEVELOPERS-DIVERSIFIED-REALTY-CORP_8-](http://www.facs.org/sec-filings/091023/DEVELOPERS-DIVERSIFIED-REALTY-CORP_8-K/137775exv99w2.htm)

[K/137775exv99w2.htm](http://www.facs.org/sec-filings/091023/DEVELOPERS-DIVERSIFIED-REALTY-CORP_8-K/137775exv99w2.htm) (mentions the Masonite (Ukiah) property, pg. 44 under "Land and Construction Projects Primarily on hold").

Maquarie Group, LLC, of Australia, a lender to DDR, is managing the sale of a large block of the DDR holdings. An announcement of the same can be found here:

<http://www.costar.com/News/Article.aspx?id=EE18D0D42188B0B3B47CF5B6A39D72FD>

More information on DDR's status can be found in a Mendocino Independent article found at <http://www.mendocinocountry.com/independent/ddrfinances.html>

The property is believed to have been purchased for ~\$6.5million at the market peak (8/2006). It is unknown at this time what this property might be purchased for. Our advantage is that the owner, DDR, is having a fire sale of its properties and this one is undeveloped (far less asset value than others in its portfolio)...

More Information:

* PG&E

Electricity rates increased 15% between 10/1/2008 and 1/1/2009. As of 1/1/2009 the average rate was \$0.16 (up from just under \$0.10 in 2000). The trend is steeply upwards. Solar production is at peak time of day and is sold at the peak rate (~\$0.36 to 0.39/KWhr). Rate projections call for ~7% increase annually. PPAs with PG&E typically max at \$0.246/KWhr.

* Mendocino Energy Potential

More discussion of Mendocino energy issues, solar as well as the NCPA can be found here (dated, 2005):

<http://www.greentransitions.org/Papers/EnergyIndependencePlan.pdf>

* Solar Production:

Solar PV (crystalline) has a warranted life of 25 years. Most utility-level installations look at either the 20 or 10 year life for their investment return.

Southern California Edison medium/large scale PV installed cost is \$3500/KW (2008 dollars) or \$3.50/watt. Others state this figure can be as high as \$6000/KW; but solar PV prices dropping dramatically. AffordableSolar puts a 1MW system cost(installed) at \$4350/KW before credits & rebates (www.affordable-solar.com/commercial.examplesystems.htm, also see www.solarmaxdirect.com)

Common selling point: Modular PhotoVoltaic (PV) facilities with 10 MW to 50 MW of installed capacity can be placed closer to load centers and can interconnect to existing 69-kV or 115- kV transmission lines (thereby eliminating large-scale transmission costs).

Estimated operation & maintenance costs (O&M) are \$25-30/KW per year. Tucson-Springerville report 0.12% of installed capital costs annually for their O&M.

Exelon and SunPower Corp are currently taking a 39 acre 'brownfield site in downtown (southside) Chicago and converting it into a ~10MW solar PV utility site. See:

<http://www.sincerelysustainable.com/renewable-energy/solar-renewable-energy/10-mw-solar-power-plant-in-the-windy-city>

Available solar energy per acre of land is ~4MW (~4046 m²/acre, ~1KW/m²). Actual available is limited by technology. All figures following are for crystalline PhotoVoltaic panels (not thin film).

1acre = approx 1/4MW PV
65 acres (allowing for other uses) = roughly 17MW
DC->AC watts conversion = ~0.8 (aka efficiency)

1MW *continuous* generation powers roughly 700 conventional homes. Solar generates electricity for ~1/4day therefore, 1MW solar is good for 160 homes. 17MW of solar would provide electricity for over 2500 homes, or offsetting peak power for over 12,000 homes.

17MW of solar would also offset roughly **23,000 tons of CO₂ annually** [~1350 tons/MW] (*carbon credits*) as well as save nearly **29 million gallons of freshwater annually** [~1.7mgal/MW] (used in production of an equiv. amount of conventional natural gas fueled electrical production). [also, 900lbs Ultra Fine Particulates (soot, NO_x, Sox, etc) per MW per year].

Every 1MW of solar production capacity installed is also estimated to create roughly 20 manufacturing job years and 13 installation job years. [UC Berkeley, G. Ban-Weiss]

also see <http://solarbythewatt.com>

* Multipurpose Use of Site

In addition to solar generation, panels could be elevated so the property could also provide for:

- Walking park
- Gardens
- Park & ride (parking shade structure)
- Flea & farmer's market
- Desired slaughter house

Educational/teaching facilities incorporated, in conjunction with nearby Mendocino college as well as area high schools.

* Financing

- Federal and State tax credit incentives (Fed potential of 30%, benefit to investors?)
- Utility Investment and Production tax credits
- DOE Loan Guarantee Program
- USDA, SBA loans

Treasury Grants (30% tax credit as cash)

Supplemental Energy Payment (via CPUC & power purchaser to cover difference between cost of production & sell price)

Renewable Energy Credits (REC) (\$3-30/MWhr produced)
Carbon Credits (\$3-30/ton, proj. to be >\$100/ton by 2020)

Renewable Portfolio Standards (RPSs) – utility mandate as incentive to buy

Assumptions

Property purchase **\$2.25million** (~\$30k/acre, still above market)

Owner on Record: DDR DB Mendocino Crossroads LLC, 3300 Enterprise Pkwy.,
Beachwood, OH 44122

[this is the big unknown factor!]

Devote 65 acres to solar

~0.25MW/acre = ~16MW production

Orient to maximize summer peak generation (4pm goal).

Installation/Buildout

Cost for installation (through production): \$4.25mil/MW or **\$68 million**
(2010 pricing (trend descending), not counting any credits or incentives)

Production

5.5hrs insolation/day x 0.79 eff. = ~70KKWhr/day and 25MKWhr/year (AC)

At \$0.30/KWhr peak rate, this is worth ~\$7.6million annually.

[At \$0.215/KWhr, (e.g. PG&E 20 yr PPA), this is worth ~**\$5.4 million annually**]

Offset with O&M costs

\$30K/MW installed x 16MW = **\$0.48million annually.**

Leaving ~**\$4.9million annually** in revenues.

(not counting other property uses' offset, RECs, carbon credits, etc.)

Acronyms

RPS - renewable portfolio standards (% renewable vs. conventional)

IOU - investor owned utility

POU - publicly owned utility

ESP - energy service providers

CCA - community choice aggregators (muni driven competitive acquisition of bulk energy contracts)

PV - photovoltaic (solar panel that directly produces electricity, universal)

CSP - concentrated solar power (solar thermal production of power, generally in desert areas)

PPA - power purchase agreement

FiT - feed in tariffs (set price paid for renewable energy fed into grid, often higher than traditional power prices)

LCOE - levelized cost of energy (life cycle cost of energy and production for proper comparison of types of energy costs)

More Details

Baseline Considerations:

First consideration for hiring be given to local residents

Viable interest on gov't loans $\leq 6\%$

We retain Carbon Credits, dual use leases.

We pass on 30% tax credits to investors (or use cash to offset debt/equity)

PPA includes RECs?

10 or 20 years?, no ownership xfer at end, (i.e. buyout figure only)

Tie PPA to their rate increases (e.g. increase every 1, 5 years?)

Other uses (concurrent):

Park'n Ride (rail, college) ***for new county complex?! (= more space for buildings!)**

Shade greens greenhouses, (flea, farmer's) markets

Slaughter house, cart track – larger bldg (~117000ft²/~2.7acres)

Educational & O&M office – smaller bldg (~7200ft²)

PV Development:

Use SunPower for site develop, w/ SunPower high effic. Panels and T10/T20 tracker tech. Possible equity share? [review Top10PVDevelopers document, select from there and prepare RFPs]

Loan Guarantees:

Renewable Energy Tax Credit (Fed, 30%) has a in-service deadline of 12/31/13.

SBA 504 program provides loan guarantees for proj. up to \$10mil

USDA REAP program “ “ “ “ “ “ “ “ \$25mil

DOE loan guarantees must be solicited (legislature support?) but appear unlimited.

Treasure Grant: 30% tax credit as cash...

PPAs:

Appears that \$125/MW plus 1.5% annual increase is norm for public utilities.

Also, they want the RECs and appear to want the Carbon Credits. Investor-owned utilities appear to pay more (~\$215, \$246 max).



Project Site

Assessor Parcels 170-170-04, 12 and 13(5); 170-190-02, 03, 04, 05, 06, 09, 14 and 15.

The site is approximately 75.72 acres, irregularly shaped, and is bounded on the west by North State Street, on the south by State Highway 101, on the east by the North West Pacific Rail Road (NWPRR) tracks, and on the north by Masonite Road (*Aerial Photograph/Specific Plan Area*). The topography of the site is gently sloping from North State Street down to the railroad tracks (west to east).

The Specific Plan area is in the County Redevelopment Area and specifically located in the North Ukiah Sub Area which extends from the Ukiah City limit near the intersection of North State Street and Ford Road to an area north of the intersection of North State Street and Parducci Road. The sub area is bordered in the west by Highway 101 and on the east by the NWPRR right of way.

The site is zoned Industrial 1 (I-1) and Industrial 2 (I-2) as set forth in Section 20.096 and 20.100 of the County of Mendocino Inland Zoning Code.

Project Site Background and History (incl Environmental)

The former Masonite facility property was sold in 2005.

Prior to demolition of the former Masonite facility, the site underwent a four phase hazard abatement process. The Mendocino County Air Quality Management District, County Department of Health Services, State of California Regional Water Quality and a number of other regulatory agencies rigorously monitored the site throughout the demolition process. This process involved unannounced inspections, analytical reports, air monitoring and visual monitoring. The responsibility of the various agencies was to ensure that hazardous materials were both safely removed and properly removed. The demolition and monitoring ran smoothly and the agencies did not report any problems with the process.

Letters regarding the environmental status are attached as part of the Appendices.

[Appendices, env. Letters/docs: Woodhouse 4/7/10 (Masonite_EOSR), Woodhouse 4/14/10 (Masonite_env3), Woodhouse 2/16/10 (Masonite_env4)]

Existing On-Site Land Uses

The majority of the above ground structures on the site of former Masonite plant have been recently demolished, with the exception of a single story office building (~7200 ft²), a single story warehouse (~117000 ft²), and a residential building with garage and shed (?).

Surrounding Land Uses

South of the project site, across State Highway 101, there are a number of existing commercial and agricultural uses. Located east of the site, across the NWPRR railroad tracks there is vacant land, scattered industrial uses and further east, the Russian River. North of the site, across Masonite Road, are additional industrial and commercial uses. Finally, to the west of North State Street is an existing mix of residential, agricultural, and commercial uses.

This information has been researched and developed by

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