

DTE Energy®



Powering Michigan's Energy Future

Chuck Conlen

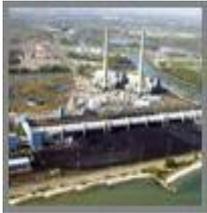
Director, Renewable Energy

DTE Energy

Who is DTE Energy?

Regulated Utilities

~75% of DTE Energy's 2009 Earnings



Detroit Edison

- Electric generation and distribution
- 2.1 million customers
- Fully regulated by Michigan Public Service Commission (MPSC)



MichCon

- Natural gas distribution
- 1.2 million customers
- Fully regulated by MPSC

Complementary Non-Utility Businesses

~25% of DTE Energy's 2009 Earnings



Gas Storage and Pipelines



Power & Industrial Projects



Unconventional Gas Production



Energy Trading

Detroit Edison's renewable energy efforts are in support of Michigan's RPS Legislation

Legislative Requirements

- 10% of retail sales, using Renewable Energy Certificates
- New capacity requirements for Detroit Edison
 - 300 MWs by 2013
 - 600 MWs by 2015
- Must be Michigan based

Qualifying Technologies



Solar



Wind



Biomass



Water

Some Co-Generation



Detroit Edison RPS Portfolio Plan – Forecasted Spending

RPS investments under Detroit Edison's renewable energy plan projected at \$2B over 20-year plan

Detroit Edison-Owned

- ~500 MW of wind assets
- ***15 MW of Detroit Edison-owned solar pilot program***
- Equivalent of 29 MW of co-firing renewable fuels in existing generating facilities (e.g., displaces non-renewable fuels)

Contracted (PPA & REC purchases)

- ~500 MW of purchases from third parties over the 20 year program. Majority will be sourced from wind turbines
- 5 MW customer-owned solar pilot program

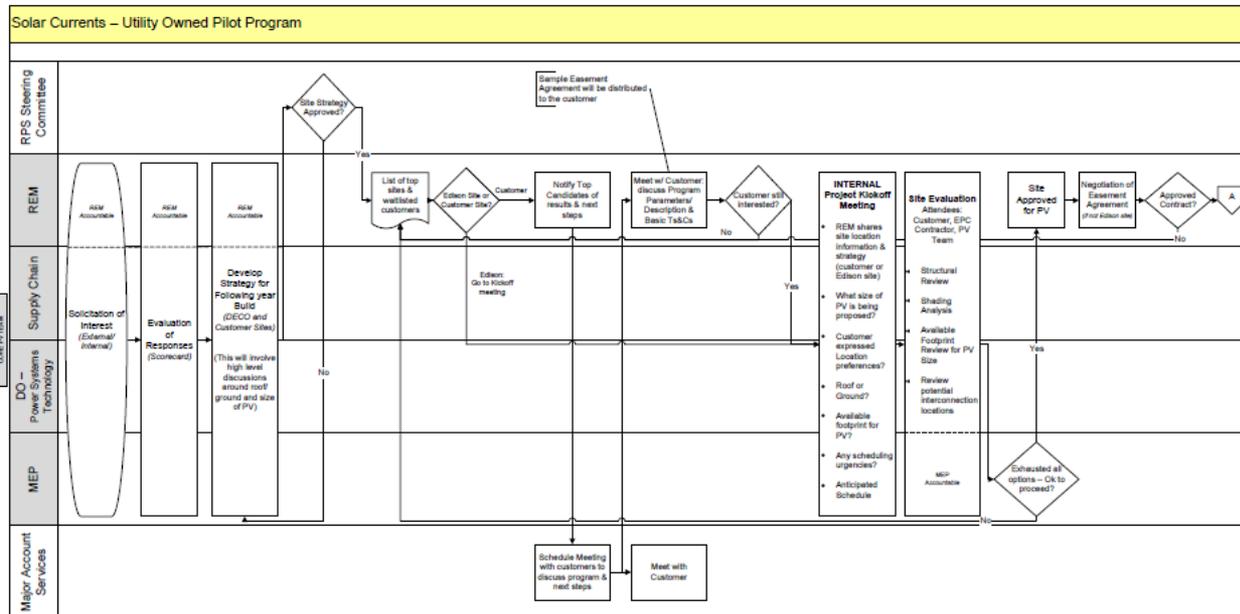
Detroit Edison-Owned Solar Pilot Program



- 15 MW in total nameplate capacity
- \$112 million budget over 5 years
- Sited on large rooftops, ground-mounted or on DTE Energy facilities
- Using standard site easement agreements
- Purpose of pilot program is to gain knowledge and experience
- Multiple technologies
- Physical and process integration with distribution system operations

Project Development Process

- **Select Customer** – Through a Solicitation of Interest or an Economic Development opportunity
- **Negotiate site easement agreement** with customer and conduct Initial Site Feasibility Assessment of - (3-5 Months)
- **Engineer, Procure and Construct (EPC)** project - (6-8 Months) provided by Nova Consultants, Novi, Michigan



Considerations for selecting the customer/site

- Available space
- Location (roof vs. ground mounted)
- Consideration of visibility in the community, either through location, significant visitor traffic, education or community outreach



Ground mounted examples



Monroe County Community College

- Array size 513 kW DC
- Approximately 3.3 acres
- 2,280 Schott PV modules
- A123 Systems 500 kW grid-supported battery system

A123
SYSTEMS

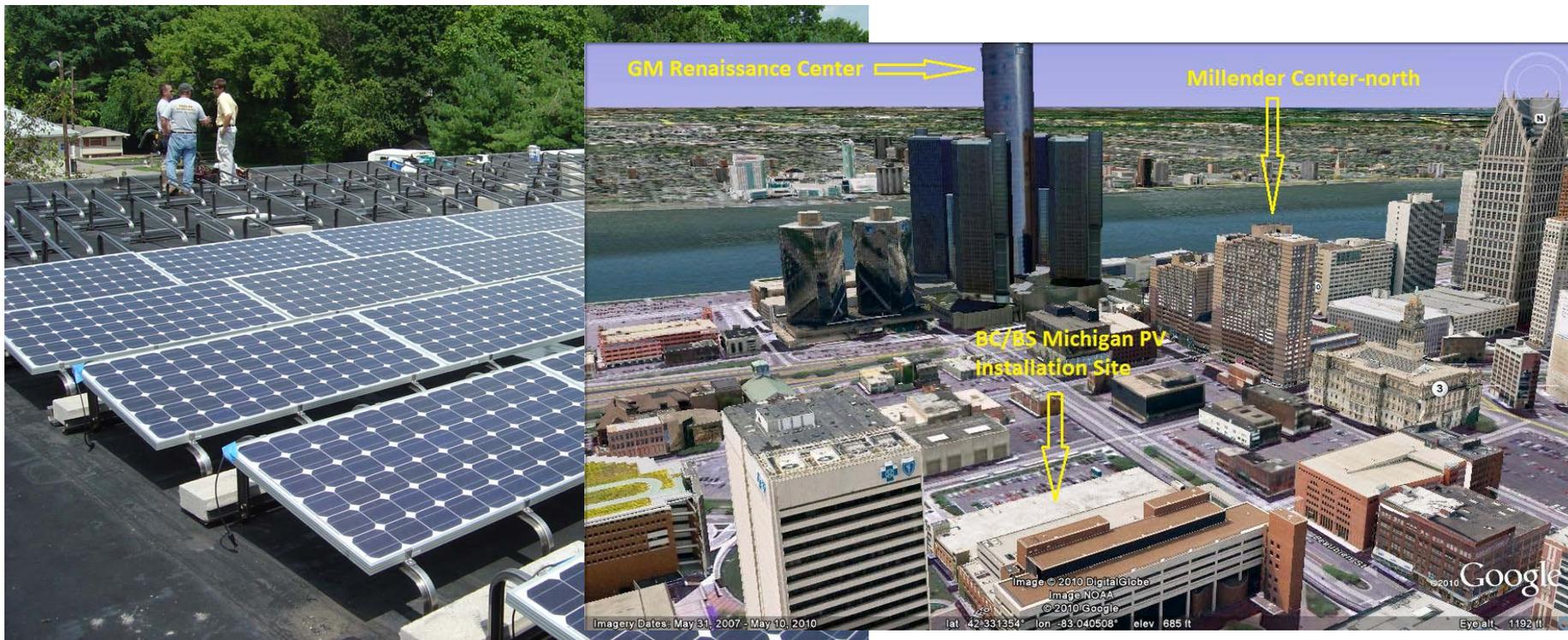


Ford Wayne Assembly Plant

- Array size 502 kW DC
- Approximately 4.1 acres
- 2,231 Schott PV modules
- Xtreme Power 750 kW grid-support battery system



Roof mounted example



Blue Cross Blue Shield

- Nominal 200kW Array size
- Approximately 30,000 square feet
- ~800-900 PV modules

First site on DTE property in Scio Township



- Replaced project that was constructed in 1996
- 40 kW of fixed mounted
- 20 kW of single-axis tracking



Negotiate Site Easement Agreement

Basic Terms and Conditions

- 20 year agreement.
- Remain full-service bundled electric customer for the 20 year term.
- Up-front Construction Payment and an Annual Easement Payments.
- Removal/Relocation cost for early termination.
- DTE owns the Electric Energy and the Renewable Energy Credits (RECs) generated from project.



Blue Cross
Blue Shield
of Michigan



Engineer, Procure and Construct (EPC)

- Site survey and feasibility study
- Design

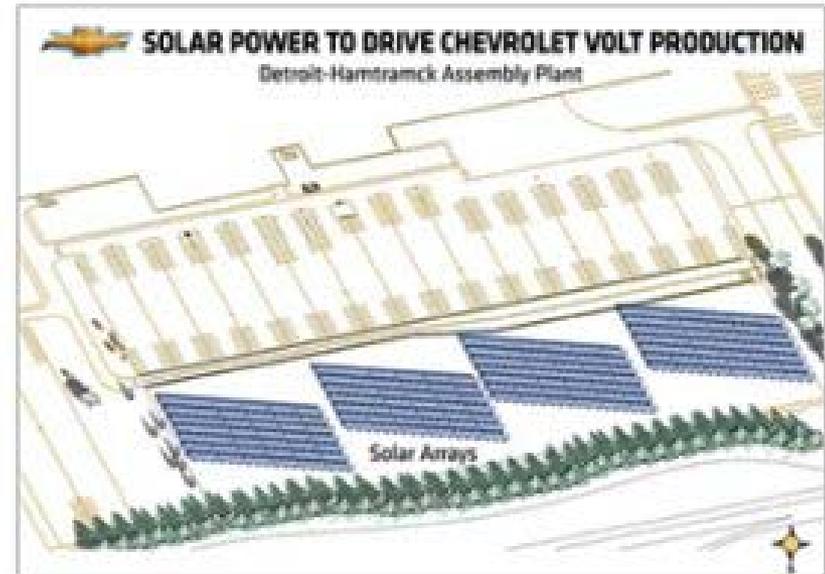


concrete ballasts



GM PV Solar Project Under Construction

- Nominal 500kW PV solar array (actual will be 516kW)
- Approximately 264,000 square feet (6.06 acres)
- Approximately 4,032 Sharp rigid thin film PV modules
- Ballast and racking, ground mount installation
- 1 Satcon PowerGate Plus 500kW inverter supplies AC power to step-up transformer
- 1 Cooper step-up transformer will provide medium voltage (13.8kV) to GM's medium voltage distribution system, in Substation #3.



Educational Kiosk Features



- 32" Monitor with video on solar basics
- 19" Monitor with web based monitoring of the project
- Solar panel sample
- Solar messaging

LOAD | watch - Energy Monitoring Service

Ford MAP/WAP - Microsoft Internet Explorer provided by DTE Energy

Address: <https://wap.load-watch.com/apps/solar/ford/>

DTE Energy **SolarCurrents™**

Ford MAP/WAP

Location: 37000 Michigan Ave, Dearborn, MI

Description: 502 kW_{DC} solar fixed array photovoltaic system

Current Output: 234 kW_{AC}

Current Weather: ☀️☁️ 84°F

[Click here](#) to see the last twelve months' data...

Power Produced at FORD MAP/WAP (in kWh):		Lifetime output from this facility represents:	
Last 24 Hours	2,598	230	Metric Tons of CO ₂ Avoided 
Last 7 Days	18,580	465,087	Miles Worth of CO ₂ Emissions from Average Car 

Website Features

1. Aggregate of all DTE Energy-owned solar sites
2. Each installation will have it's own page with project description.
3. Real-time and historical data will be displayed.
4. Data displayed:
 - Current Output (MW)
 - Energy Production (kWh)
 - Carbon offset values

www.dteenergy.com/dtesolar