REQUEST FOR APPLICATIONS

for Distributed Energy Resource Related Activities 2014

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Request for Applications - 2013

The Wisconsin Distributed Resources Collaborative has $5,000 of funding to donate toward distributed energy resource related activities.

For purposes of this Request for Applications, distributed resources include:

- **distributed generation**
- **energy storage and other power quality / storage devices**
- **conservation and demand-side management**

Distributed generation are small generating facilities (15 MW or less) located at a customer or utility site and may be stand alone or connected to the electric distribution system. These units are used for generating electricity alone or in combination with the use of waste heat.

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Relevant activities include:

- **commercial distributed energy projects**
- **commercial distributed energy studies**
- **distributed energy events**
- **distributed energy related conference sponsorships**

Examples of several potential project topics include, but are not limited to:

- Literature review of the value of distributed generation
- Determining the value of utility-owned distributed generation
- Integration of variable output distributed generation systems into distribution systems
- Determination of non-disruptive penetration levels for distributed generation on distribution systems
- Distributed generation applied research and development, and associated data collection
- Commercial requirements and business practices
- Distributed generation siting and permitting issues

Projects were scored based on the following criteria:

- Project Description – 20%
- Project Relevance – 25%
- Project Potential – 25%
- Applicant Qualifications – 15%
- Project Deliverables – 15%

Three projects were funded in the 2013 round:

City of Milwaukee,
Consistent Solar Inspection Criteria and Training for Municipalities,
$3,000

Ben Kaldunski – Master's Candidate, University of Wisconsin-Madison,
An economic analysis of microgrids: A viable technology option for expanding distributed generation in urban and rural Wisconsin,
$1,000

Renew Wisconsin,
RENEW's Energy Policy Summit on January 10, 2014,
conference sponsorship $1,000

Request for Applications - 2014

The Wisconsin Distributed Resources Collaborative has $7,500 of funding to donate toward distributed energy resource related activities.

Should WIDRC direct this funding to specific areas of interest?

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Possible area of interest 1 – Recommend changes to interconnection rules based on suggestions in Clark Gellings (EPRI) presentation.

California's Electric Tariff Rule 21 (Rule 21) is a CPUC-approved tariff that describes the interconnection, operating and metering requirements for generation facilities to be connected to an investor-owned utility's distribution system.

Recommendations for Updating the Technical Requirements for Inverters in Distributed Energy Resources:

a. Anti-Islanding Protection to reflect proposed new voltage ride-through settings;
b. Low and High Voltage Ride-Through to reflect proposed new default voltage ride-through requirements;
c. Low and High Frequency Ride-Through to reflect proposed new frequency ride-through settings;
d. Dynamic Volt-Var Operation to reflect proposed new dynamic volt/var perations requirements;
e. Ramp Rates to include proposed new ramp rate requirements;
f. Fixed Power Factor to reflect the proposed new fixed power factor requirements;
g. Soft Start Reconnection to reflect proposed new reconnection by soft-start methods.

In addition, if the utilities consider it advantageous, they may propose criteria related to communications, controls and advanced functionalities of the inverter needed to implement control by the utility.

Smart inverters can improve the performance of the distribution grid and the network as a whole, or, conversely, if improperly applied, can present serious problems in terms of voltage control, the clearing of short circuits and the creation of dangerous “islanding” conditions.

Possible area of interest 2 – Propose and analyze how to include EE and RE measures to meet the goals of Wisconsin's *Clean Power Plan*.

On June 2, 2014, the U.S. Environmental Protection Agency proposed a plan to cut carbon pollution from power plants.

States can choose to rely on measures EPA used to calculate the goal to varying degrees, as well as on other measures that were not part of the goal-setting analysis.

States can choose how to meet the goals – they have up to two or three years to submit final plans and up to 15 years for full implementation of all emission reduction measures, after the proposed Clean Power Plan is finalized.

EPA's guidelines also provide flexibility and encourage states to look across their whole electric system to identify strategies to include in their plans that reduce carbon pollution from fossil fuel fired power plants.

Measures states can choose to rely on in their plans include:

- demand-side energy efficiency programs
- renewable energy standards

Renewable Electricity Futures Study

- *National Renewable Energy Laboratory*
- *Lawrence Berkeley National Laboratory*

NREL/TP-6A20-52409-ES; December 2012

RE Futures explores a number of scenarios using a range of assumptions for generation technology improvement, electric system operational constraints, and electricity demand to project the mix of renewable technologies—including wind, PV, concentrating solar power (CSP), hydropower, geothermal, and biomass—that meet various prescribed levels of renewable generation, from 30% to 90%.

BIENNIAL REPORT ON IMPACTS OF DISTRIBUTED GENERATION
Prepared in Compliance with California AB 578

California Public Utilities Commission - MAY 2013
Prepared by Black & Veatch

Key Issues for Integration

• Lack of monitoring, forecasting and control capabilities limits the utilities' ability to manage DG integration into the distribution system, and ability to rely on DG capacity.

• Lack of capabilities integrating DG (especially solar PV) with distribution and transmission models. This affects the utilities' abilities to accurately simulate and plan for DG.

• Distribution system design is not intended for injection of generation leading to voltage issues, reverse power flow, etc. This issue will become more widespread as DG penetration increases.

• Inverter standards may need to be changed to allow better support of the grid.

Recommendations for Future Study

- How is DG affecting the distribution system currently, and how will this change in the future?
- How much more DG could be deployed on the system with minimal impacts and enhanced benefits?
- What additional tools are needed to identify optimal location, type, and timing of DG?
- How can an enhanced understanding of the costs of different impacts, benefits and solutions help inform effective policy to enable the deployment of more DG?

How could the deployment of more DG be beneficial? If deployed ineffectively, how could it be deleterious?

Comments received on the RFA - 2013

- qualify the use of distributed generation to renewable-based generation

- better ways to describe or define a qualifying renewable-based distributed generation facility.