

Renewable Electricity and the Clean Power Plan

A discussion with CRS and RAP

May 18, 2015

Minnesota Pollution Control Agency



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About Center for Resource Solutions

A nonprofit organization creating policy and market solutions to advance sustainable energy since 1997.

- Expert assistance
- Renewable energy and climate policy
- Renewable Energy Markets conference
- Green-e certification for suppliers and users of renewable energy and carbon offsets



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About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raonline.org



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Renewable Energy for CPP Compliance

“ ... a state could take into account all of the CO₂ emission reductions from renewable energy measures **implemented by the state, whether they occur in the state or in other states**. This proposed approach for RE acknowledges the existence of **renewable energy certificates (RECs) that allow for interstate trading of RE attributes ...**”

EPA Carbon Pollution Emissions Guidelines for Existing Stationary Sources: Electric Generating Units, Federal Register vol. 79, No 117, June 18, 2014, Sec. VIII, F.6, p 34922



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Determining Avoided Emissions

- If avoided emissions **data** for renewable resources are **available**, regulators will need to know how they were developed in order to assess their suitability.
- If such **data** are **unavailable**, regulators will need to be able to develop their own avoided emissions estimates.
- The three most widely used **methods**:
 - Average Emissions
 - Marginal Emissions
 - Dispatch modeling



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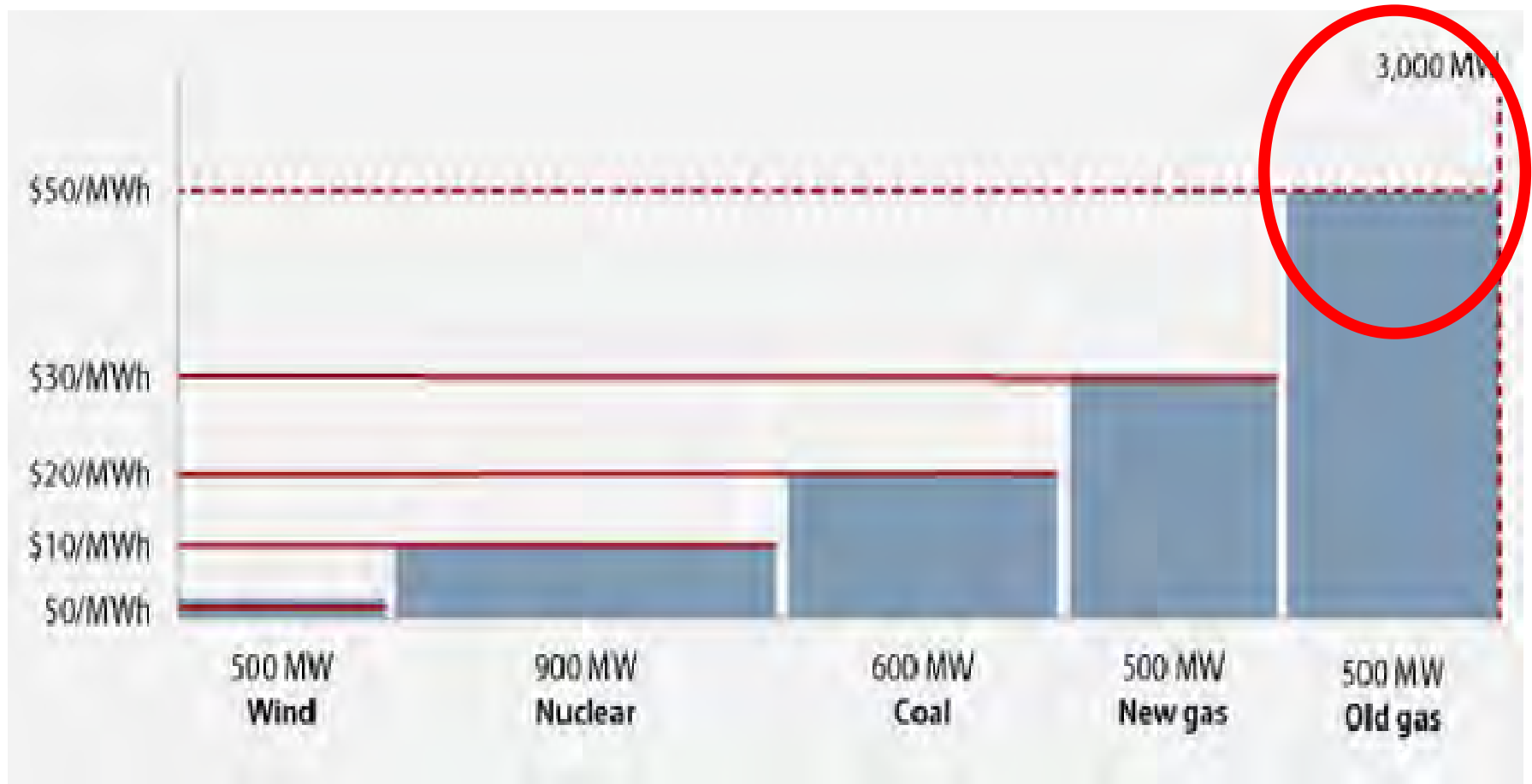
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Avoided Emissions: An Illustration



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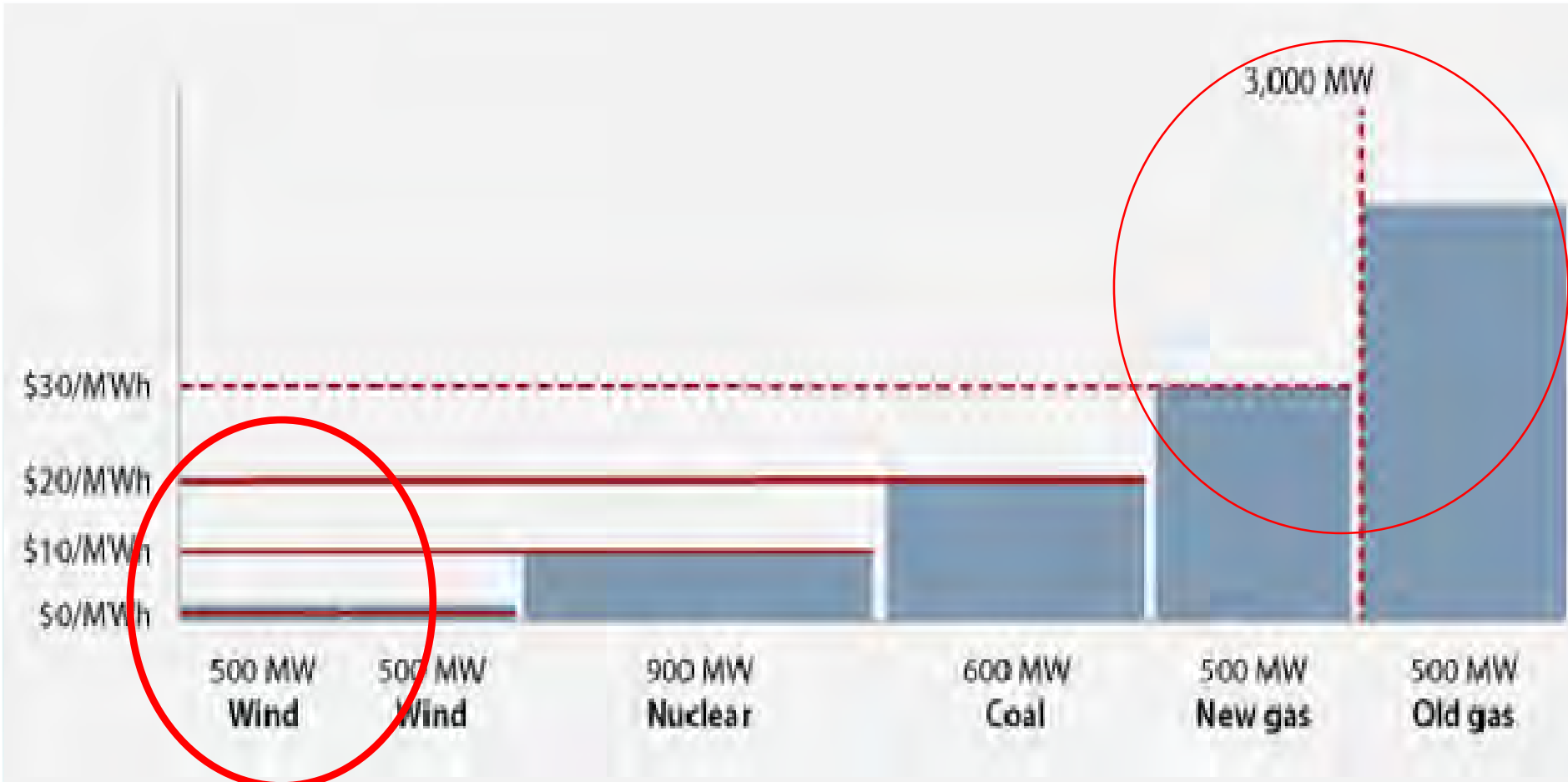
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Avoided Emissions: An Illustration



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Avoided Emissions

- Wyoming: approx. 2,000 lbs/MWh
- Connecticut: approx. 1000 lbs/MWh



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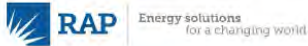
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Two RAP Resources re Avoided Emissions



Calculating Avoided Emissions Should be a Standard Part of EM&V and Potential Studies

John Shenot, Regulatory Assistance Project

ABSTRACT

Thanks in large part to some recent guidance and proposed federal regulations by the U.S. Environmental Protection Agency (EPA), state and local air pollution regulators have a growing interest in using energy efficiency (EE) as a strategy to improve air quality. The largest challenge for air pollution regulators is to quantify the impacts of EE in a way that is suitable for regulatory purposes. To measure the air quality impacts of EE, one has to begin with an assessment of energy savings. However, assessing the timing and location of energy savings is also critically important for estimating avoided emissions. EE professionals are better suited to this task of quantifying current or potential future avoided emissions than the air pollution regulators themselves. This paper explains the enormous hurdles that air pollution regulators face in this area, and why the methods are more suitable for use by EE professionals. This paper also suggests how EE professionals might collaborate with air pollution regulators to better understand the data needed for regulatory purposes, and modify their standard practices accordingly. Further, it explains how EE professionals and the other audiences they serve (utilities, public utility commissions, and consumer advocates) will all benefit from a greater emphasis on the air quality benefits of EE. Finally, encouraging examples where these ideas are already being put into practice are discussed briefly.

Introduction

Energy consumption and air quality are closely linked. Data collected by the U.S. Environmental Protection Agency (EPA), shown in Figure 1, indicate that the electric power sector is a major contributor to some of the air pollutant emissions that most concern air quality regulators. Air pollution remains a widespread public health problem, despite decades of improvement in national emissions. The EPA estimates that 150 million Americans live in areas that are currently designated as exceeding health-based National Ambient Air Quality Standards or NAAQS (U.S. EPA 2013). Air pollution regulators in areas so designated are required under the federal Clean Air Act to develop, for the EPA's approval, "State Implementation Plans (SIPs)" for restoring air quality to healthy levels.

Energy efficiency (EE) is an effective means of reducing air pollution, because it directly or indirectly reduces the need to combust fossil fuels. Direct reductions occur when fossil fuels are combusted in the same location where the energy is used, for example, in a residential furnace. A more efficient furnace can heat a home using less fuel and thus avoid emissions at that specific location. Indirect reductions occur when the energy use in one location affects fossil fuel combustion in another location, as is usually the case with grid-supplied electricity. If a small business reduces its electricity consumption, somewhere on the grid a generator will



Quantifying the Air Quality Impacts of Energy Efficiency Policies and Programs

Author
John Shenot



August 2013

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Avoided emissions from RE are used to adjust a rate or automatically lower total emissions.



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RECs and CPP Compliance

Tracking avoided emissions from RE is critical for both mass- and rate-based states:

1. To avoid double counting
2. For “fairness”
3. For consistency with other state RE policies (e.g. RPSs)
4. For consistency with the voluntary RE market



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REC Tracking Systems Support State Needs: *Document Ownership and Demonstrate Compliance, including Preventing Double Counting under CPP*

1. For accounting of emissions reductions from RE
2. For accounting of emissions reductions from RE between states (interstate generation) for both mass and rate-based reporting
3. For prospective accounting in state plans
4. For accounting for other RE-related adjustments



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Example

Voluntary Renewable Energy Set Aside

RGGI and CA VRE Set Asides

- Preserve voluntary market goal of reducing emissions beyond what is required by law
- Allowances are retired on behalf of voluntary RE activity in each state by regulators, thereby reducing total emissions

Minnesota Voluntary RE Market

- 950,000 MWh generated in state (80% wind)
- 800,000 MWh sold in-state
- 34,000 in-state residential and nonresidential buyers

(Green-e Energy audited 2013 data)



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Accounting for Interstate Generation

- State A uses rate-based reporting
- State B uses mass-based reporting
- State A has an RPS that includes wind facility in State B that displaces emissions in State B.
 - If State A adjusts its rate based on its RPS and State B reports its mass, there is double counting of the same emission reduction
 - State A cannot report these emission reductions from the RPS unless State B makes an adjustment

Tracking systems and REC retirement can provide basis for tracking needed adjustments



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Using RE and RECs under the CPP

For rate-based states:

- Adjust rates for RE generation for which RECs are owned and retired

For mass-based states:

- Adjust mass emissions upward (or retire allowances) to account for effect of RE



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REC Tracking Systems and CPP Compliance

- Documenting renewable electricity production
- Identifying renewable energy generators and generation eligible for CPP compliance by state
- Verifying use of RE for compliance with a specific state plan
- Facilitating interstate trading of RE for CPP, and ensuring against double-counting



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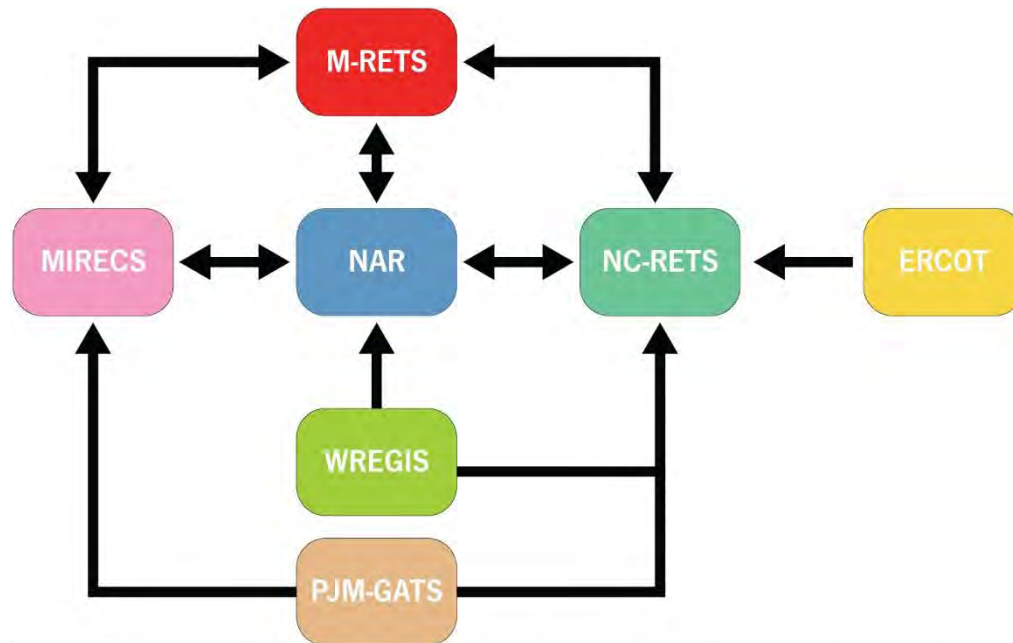
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RE Trading and Registry Transfers



Source: North American Renewables Registry (<http://www.narecs.com>) and The Midwest Renewable Energy Tracking System (M-RETS; <http://www.mrets.org/resources/frequently-asked-questions/>). Data accessed 2/10/15.

RPS States, DC and Puerto Rico	Allow RPS Imports From
4 States Allow No Imports	
2 States Allow Imports From	1 State
1 State Allows Imports From	2 States
2 States Allow Imports From	3 States
3 States Allow Imports From	4 States
1 State Allows Imports From	6 States
2 States Allow Imports From	7 States
1 State Allows Imports From	8 States
15 States Allow Imports From	9+ States



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State Verification and Reporting

Example Certificate Retirement Report

Account Holder	Sub-Account	Retirement Types	Facility ID	Generating Facility	Fuel Type	Vintage Year/ Month	Certificate Serial Numbers	Quantity	State X Eligible	State Y Eligible	State Z Eligible	Green-e Energy Eligible
ACME	State X Renewable Energy Compliance	RPS	E9823	Slainte Wind Project - Dartmouth Ridge	Wind	11/2013	108-FR-12-3654-65987-1 to 98654	98,654	Yes	No	Yes	Yes
ACME	State X Renewable Energy Compliance	RPS	E9823	Slainte Wind Project - Dartmouth Ridge	Wind	11/2013	365-EW-36-4527-45871-1 to 87457	87,457	Yes	No	Yes	Yes
ACME	State X Renewable Energy Compliance	RPS	R2165	Kiba Solar - Blackrock Solar Energy Project	Solar	10/2013	656-GF-36-4712-56471-1 to 200	200	Yes	No	Yes	Yes
ACME	State X Renewable Energy Compliance	RPS	H9032	Fork Union County - Damascus Renewable Energy Center	Biomass	11/2013	659-LA-85-2198-34985-1 to 69832	69,832	Yes	No	Yes	Yes
ACME	State X Renewable Energy Compliance	RPS	J8723	Sol Solutions - Ridgefield Solar Farm	Solar	9/2013	879-AQ-14-3654-45698-1 to 20	20	Yes	No	Yes	Yes

Retirement reasons/subaccounts can be expanded to ID generation that is used for CPP by obligated entities.



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For state plans involving RE, REC retirement (not simply for eligibility) is needed for CPP compliance.



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REC Tracking Systems for CPP Compliance

- RECs for CPP compliance should be identified in a tracking system
- RECs may not need to be managed any differently for CPP than they are currently for a state RPS program
- Tracking systems can identify RECs that have been included in a state plan
- Additional information can be tracked if needed



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Next Steps


Tracking system administrators and states collaborate to:

1. Add new certificate data (e.g., avoided emissions, project eligibility) and reporting functionality to support states/regions CPP needs
2. Augment information collected during certificate retirement
3. Provide administrative access for state regulators
4. Expand certificate import/export functionality to match state policies for CPP





Resources

Navigating EPA's Clean Power Plan for Compliance With Renewable Energy




February 11, 2015

David Farnsworth
Senior Associate
Regulatory Assistance Project



Tracking Renewable Energy for the U.S. EPA's Clean Power Plan



Guidelines for States to Use Existing REC Tracking Systems to Comply with 111(d)



June 25, 2014


Robis Quarrier
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Supporting State Compliance With the EPA Clean Power Plan



Recommendations for Renewable Energy Certificate Tracking Systems



February 11, 2015

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Available at: www.resource-solutions.org/publications



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