RPS 101:

What is a Renewable Portfolio Standard?

June 15th
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Sr. Energy Analyst

Union of Concerned Scientists
QUICK ROAD MAP

ABOUT
OVERVIEW
COST
SUCCESS
NEW ORLEANS
ABOUT UCS
Science and for a healthy planet safer world.
OVERVIEW
Common Elements of an RPS

- Target Amount
- Target Year
- Eligible Resources
36 Years of RPS Policies

2019 activity (NM, WA, DC, NV, MD, PR, CT)

Source: Berkeley Lab
Current as of October 2018
Carve-outs (or Set-asides)

- Solar or DG multiplier
- Solar or DG Carve-out
- Carve-out + multiplier
- RPS, no solar carve-out
- No RPS

Map showing the status of carve-outs across the United States.
Renewable Energy Credit (REC) trading

MRETS tracks RECS across the US

Other groups track Compliance RECS in other States
SUCCESS
Renewables Growth (Historical)

**WIND**

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Nameplate capacity (GW)

**SOLAR**

Voluntary Compliance

REC Compliance

REC Carve Out
Monetized Health Benefits

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<table>
<thead>
<tr>
<th>Billion $2015</th>
<th>AP2</th>
<th>EASIUR Low</th>
<th>EPA Low</th>
<th>Central Est.</th>
<th>EASIUR High</th>
<th>EPA High</th>
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Other benefits

- Employment (direct and indirect)
- Reduced reliance on fossil fuels
- Reduced water consumption
- Reduced toxic air pollution
- Reduced greenhouse gas emissions
COSTS
Cost Containment

- Renewable Energy Fund Cap
- Renewable Energy Contract Price Cap
- Alternative Compliance Payment
- Rate/Bill Impact
Compliance costs vs. cost cap

Cost cap (implied or explicit)

Compliance cost

Bill Impact (%) Excluding Benefits

0%
5%
10%
15%
20%
25%
30%
35%
40%

DC MA RI NJ PA MD NH CT VT ME WA OR DE TX MI CO OH NC IL MO MT

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“Tier 1 REC” Prices

[Graph showing trends in REC prices for various locations from 2010 to 2018.]
Net Benefits
Net Benefits of an RPS

- Electric System Cost
- Air Pollution and Health Benefits
- GHG Benefit
- Nat. Gas Savings

$ per MWh of Renewable Energy
100% Clean or Renewable Electricity Targets
Anticipated, Proposed or Enacted 100% Standards and Goals

- WA: 2045 (Clean)
- NV: 2050 (Clean)
- CO: 2050 (Clean)
- CA: 2045 (Clean)
- NM: 2045/2050 (Clean)
- HI: 2045 (Renewables)
- PR: 2050 (Renewables)
- MN: 2045-2050 (Clean)
- WI: 2050 (Clean)
- IL: 2030 (Clean), 2050 (Renewables)
- ME: 2050 (Renewables)
- MA: 2035 (Renewables)
- CT: 2045 (Renewables)
- NY: 2052 (Renewables)
- NJ: 2035 (Renewables)
- PA: 2050 (Renewables)
- DC: 2032 (Renewables)
- NC: 2050 (Renewables)

**KEY**
- Legislation Anticipated
  - 100% Clean Electricity Standard legislation expected to be introduced in 2019
- Non-Binding Goal Introduced
  - 100% Clean Electricity Goal legislation has been introduced
- Non-Binding Goal Enacted
  - 100% Clean Electricity Goal legislation has been enacted
- Standard Introduced
  - 100% Clean Electricity Standard legislation has been introduced
- Standard Enacted
  - 100% Clean Electricity Standard has been enacted


Note: Colorado’s 100% clean electricity goal only applies to Xcel Energy.

100% Clean or Renewable Electricity Standards have been enacted in Hawaii, California, New Mexico, Washington, Puerto Rico, and the District of Columbia.

100% Clean or Renewable Electricity Goals have been enacted in Nevada and Colorado.
WHAT WOULD AN RPS MEAN FOR NEW ORLEANS
Energy Choices for New Orleans

- Rooftop Solar
- Utility Scale Solar

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<thead>
<tr>
<th>Energy Source</th>
<th>Price per MWh</th>
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<tr>
<td>Entergy out of state nuclear</td>
<td>$77</td>
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<tr>
<td>Market purchases</td>
<td>$61</td>
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<td>Entergy AR Coal</td>
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<td>MISO Peak</td>
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<td>MISO Avg</td>
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<td>Wind PPA</td>
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<tr>
<td>Efficiency</td>
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</tbody>
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Data Sources and References

- Energy Information Agency Form 860
- Federal Energy Regulatory Commission Form 1
- S&P Global Market Intelligence
- NREL Solar Benchmark 2018
- NREL Wind Benchmark 2018 Q1
- LBNL: RPS Cost Benefit 2017
- LBNL: 2018 RPS Update
- CPI: Limiting the Cost of Renewables
- Synapse Energy Economics: Cost of Saved Energy
- DSIRE
- EQ Research
- MRETS
Thank You