

California Environmental Protection Agency

AIR RESOURCES BOARD

California Renewable Electricity Standard

**May 20, 2010
9:00 A.M. to Noon**

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Workshop Schedule

- ✓ Welcome and Introductions
- **Summary of Comments**
 - Revised Draft Regulation
 - Economic Impacts Analysis
 - Environmental Impacts Analysis
 - Next Steps



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Compliance Topics

- Multi-year compliance intervals after 2020
- Delay compliance determination beyond compliance interval
- Flexible compliance
- Enforcement procedures and standards



REC Topics

- 14 Supported no limits on unbundled RECs
- 7 Supported CPUC Decision style REC usage
- Unlimited/Limited REC trading period
- Unlimited/Limited REC banking period
- Unlimited/Limited REC trading parties
- Property rights



General Topics

- Support/Opposition/Modification of partial exemption
- Support/Opposition to RES Qualifying POU Resources
- Support/Opposition to inclusion of DWR and/or WAPA
- Accommodate possible federal program
- Evaluate impacts on agricultural sector
- Clarification comments



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Applicability

- Regulated Parties include:
 - Aggregators;
 - Local Publicly Owned Electric Utilities;
 - Electrical Corporations;
 - Electric Service Providers;
 - Community Choice Aggregators;
 - Electrical Cooperatives;
 - Department of Water Resources; and
 - Western Area Power Administration



Partial Exemption Threshold

- Regulated Parties with less than 200,000 MWh of retail sales
- Averaged for calendar years 2007 through 2009
- Not available for new utilities or future retail sales below threshold
- Exempt Parties are subject to annual reporting



Exemption Threshold Analysis



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RES Obligation

- Multi-year compliance intervals for regulated parties:
 - 20% for 2012 through **2014**
 - 24% for 2015 through **2017**
 - 28% for 2018 through **2019**
 - 33% by **2020** and **annually** thereafter
- Compliance based on REC retirement by March 31 following end of compliance interval
- RES Obligations work parallel to RPS compliance provisions
- Procurement and retail sales tracked and reported annually

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Alternate RES Obligations

- *Loss of Partial Exemption*
- Previously exempt Parties must procure renewable energy for any load growth until equal to next compliance interval
- *Significant Hydroelectric Portfolios*
- Regulated Parties with hydropower portfolios >67% must procure eligible renewable energy for load demands or load growth not met by hydropower



RES Qualifying POU Resources

- Protect prior RPS program investments
- Continue limited use of “RES qualifying” resources under RES:
 - Resources procured between 1/1/03 and 9/15/09 and approved by POU Governing Board for RPS program
 - Eligible for up to 20% of regulated party’s retail sales under the RES
 - Resource eligibility expires with procurement contract
 - Immediate replacement of expired contract with an eligible renewable resource



POU Claimed for RPS in 2008

| POU | Generation Type | 2008 Generation (MWh) | Percent w/out Claimed Resources | Percent w/ Claimed Resources |
|---|-----------------|-----------------------|---------------------------------|------------------------------|
| San Francisco | Self-Generation | 6,000 | 0 | 100 |
| San Francisco | Large Hydro | 1,287,000 | | |
| LADWP | Digester gas | 154,000 | 5 | 7 |
| LADWP | Aqueduct hydro | 434,000 | | |
| Northern California Power Association | Large Hydro | 333,000 | 23 | 38 |
| City of Palo Alto | RECs | 57,000 | | |
| Power & Water Resources Pooling Authority | Large Hydro | 174,000 | 9 | 29 |
| City of Riverside | Large Hydro | 34,000 | 8 | 9 |
| Roseville Electric | Large Hydro | 153,000 | 7 | 18 |
| Sacramento Municipal Utility District | RECs | 219,000 | 18 | 20 |
| City of Vernon | Large Hydro | 20,000 | 0 | 2 |
| | Total | 2,872,000 | | |

RES Requirements

- RECs from the following resources are eligible for compliance with the RES:
 - *Renewable energy resources certified by the CEC for RPS program eligibility;*
 - *Renewable energy resources certified by the CEC for the RPS program, but acquisition doesn't meet electricity delivery requirements; and*
 - *RES Qualifying POU Resources for specific POU's*
- Above options don't replace, and may not meet, RPS program requirements for Regulated Parties
- RECs must be retired in WREGIS to be eligible for RES

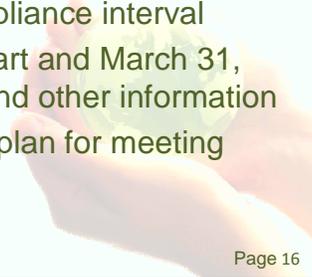
REC Trading and Banking

- Trading of RECs for up to three calendar years from WREGIS certificate issue date
- RECs may be banked in WREGIS retirement subaccount without limit for future RES obligations
- RECs from RES Qualifying POU Resources may be banked by original owner but not sold or traded to other entity
- RECs generated or owned by partially exempt Parties may not be sold, banked or traded
- Market intermediaries may participate in REC trading with Regulated Parties



RES Monitoring and Reporting

- *Annual Progress Reports*
 - Filed with ARB by July 1 beginning 2013
 - Address prior year REC retirement, retail sales and other information
- *Compliance Interval Reports*
 - Filed with ARB by July 1 after each compliance interval
 - Address REC retirement from interval start and March 31, retail sales for interval, RES obligation and other information
 - Document any compliance shortfall and plan for meeting within reporting year



Certification of RES Resources

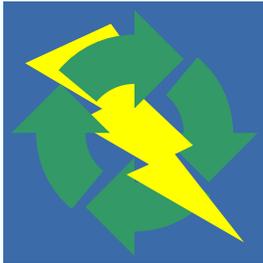
- Intent is to have CEC certify RES eligible resources under interagency agreement with ARB
- Resources eligible for compliance with RES include:
 - *Renewable energy resources eligible for RPS program;*
 - *Renewable energy resources eligible for RPS program, excluding electricity delivery requirements; and*
 - *RES Qualifying POU Resources for specific POU*

RES Enforcement and Penalties

- ARB responsible for enforcement with CPUC and CEC consultation
- Penalty provisions in Health and Safety Code
- Penalties for violations assessed on kWh basis
- ARB will use existing policies and procedures to determine penalties

RES Regulation Review

- ARB to conduct triennial assessment reviews of implementation progress
- Comprehensive review of market, technology, resource, cost, development, environmental, electricity system, and policy factors to improve program implementation or effectiveness
- Consult with appropriate parties and make use of energy agency proceedings on these issues



Questions: Revised Draft Regulation

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Economic Impacts Analysis

Economic Impacts of RES

- Use revenue requirement and resources mix to estimate other impacts of RES
 - Ratepayer Bill Impacts
 - Small Business Impacts
 - State Macroeconomic Impacts
- All results are preliminary and being reviewed



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Ratepayer Bill Impacts

- Impacts for customers based on Bill Impact Calculator provided by IOUs and the CPUC
- Impacts based on Revenue Requirement output from RES Calculator
- Distribution of impacts
 - CARE vs. Non-CARE



Residential Customer Rate Impacts

| | Percent Increase in Rates for Residential Customers | |
|-----------------------|---|-----------|
| | High Load | Low Load |
| Low Usage | 3.6 – 4.0 | 3.2 – 3.6 |
| Moderate Usage | 6.1 – 8.3 | 5.5 – 7.5 |
| High Usage | 6.7 – 9.4 | 6.1 – 8.6 |



Small Business Rate Impacts

| | Percent Increase in Rates for Small Commercial Customers | |
|---------------------------|--|-----------|
| | High Load | Low Load |
| Small Commercial Customer | 4.9 – 7.1 | 4.8 – 6.9 |



Small Business Impacts

- Average monthly electricity bill is expected to increase
- Small businesses in almost every industry spend a greater percentage of revenue on electricity costs than large businesses.
- Large businesses are likely to be more responsive to the changes required by the proposed RES than small businesses because of their greater ability to invest in energy efficient technologies to achieve energy savings

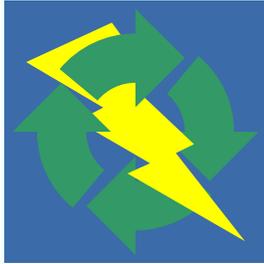


State Macroeconomic Impacts

| | 20% RPS | | 33% RES | | Incremental Impact | | Percent Impact | |
|------------------------------------|---------|--------|---------|--------|--------------------|-------|----------------|--------|
| | High | Low | High | Low | High | Low | High | Low |
| Output (Billion \$) | 3778.5 | 3778.9 | 3773.6 | 3774.5 | -4.9 | -4.4 | -0.13% | -0.12% |
| Gross State Product (Billion \$) | 2675.9 | 2676.3 | 2671.0 | 2671.8 | -4.9 | -4.5 | -0.18% | -0.17% |
| State Personal Income (Billion \$) | 2165.7 | 2166.0 | 2161.9 | 2162.5 | -3.8 | -3.4 | -0.17% | -0.16% |
| Employment (Millions) | 18.4 | 18.4 | 18.4 | 18.4 | -0.01 | -0.01 | -0.08% | -0.08% |

Next Steps

- Analysis of the Alternative
 - Require additional renewables between 20% and 33% to be generated in-state
 - Impacts on rates, small business, macroeconomic impacts



Questions: Economic Impacts Analysis

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Overview of Presentation

- Scope of Environmental Impacts Analysis
- Methodology for GHG and Criteria Pollutants
- GHG and Criteria Pollutant Emission Estimates
- Community Impacts
- Non-Air and Out-Of-State Environmental Impacts
- Next Steps



Scope of Analysis

- Develop functionally equivalent CEQA document
- Analyze environmental, public health, and community impacts of the proposed RES
- Evaluate air, land, water, biology, cultural, and visual impacts
- Meet the AB 32 requirements
- Consider alternatives to the proposed RES
 - ✓ No Project or BAU (20% RPS)
 - ✓ 33% RES with in-state only renewable generation between 20% and 33%



Methodology

- GHG emission factors:
 - ✓ Based on “net” GHG emissions (i.e., difference between new natural gas CCCT and renewable generation)
 - ✓ Include vehicle emissions for biomass generation
 - ✓ Assume negligible GHG operating emissions for wind, solar thermal, solar PV, and small hydro
- GHG emission estimates:
 - ✓ Include WECC-wide areas that supply power to CA



Methodology (cont)

- Criteria pollutant emission factors:
 - ✓ Based on ARB emissions data for existing generation facilities and environmental impact reports for new generation facilities
- Criteria pollutant emission estimates:
 - ✓ Include all generation facilities in CA



Projected Electricity Production in 2020

- 2020 Electricity Production
 - ✓ Based on 2009 IEPR Projections
 - ✓ LOW Load Forecast = 283,000 GWh
 - ✓ HIGH Load Forecast = 340,000 GWh



GHG Emission Benefits

2020 WECC-Wide (MMTCO₂e/yr)

| Scenario | LOW Load | HIGH Load |
|----------------------------|-----------|-----------|
| 20% RPS | 8 | 10 |
| 33% Proposed RES | 19 | 22 |
| Emission Reductions | 11 | 12 |



Criteria Pollutants Emission Benefits

Proposed RES, LOW Load Forecast

| Scenario | 2020 Statewide (tpy) | | | | |
|---------------------|----------------------|-----------------|-----------------|--------|-------------------|
| | ROG | NO _x | SO _x | CO | PM _{2.5} |
| 20% RPS | 2,380 | 12,800 | 2,450 | 32,800 | 3,540 |
| 33% Proposed RES | 2,140 | 11,700 | 2,340 | 31,500 | 3,210 |
| Emission Reductions | 240 | 1,100 | 110 | 1,300 | 330 |
| Percent Reductions | 10% | 9% | 4% | 4% | 9% |

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Criteria Pollutants Emission Benefits (cont)

Proposed RES, HIGH Load Forecast

| Scenario | 2020 Statewide (tpy) | | | | |
|---------------------|----------------------|-----------------|-----------------|--------|-------------------|
| | ROG | NO _x | SO _x | CO | PM _{2.5} |
| 20% RPS | 2,920 | 14,700 | 2,650 | 35,100 | 4,230 |
| 33% Proposed RES | 2,630 | 13,400 | 2,510 | 33,500 | 3,920 |
| Emission Reductions | 290 | 1,300 | 140 | 1,600 | 310 |
| Percent Reductions | 10% | 9% | 5% | 5% | 7% |

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Criteria Pollutants Emission Benefits (cont)

RES Alternative, LOW Load Forecast

| Scenario | 2020 Statewide (tpy) | | | | |
|---------------------|----------------------|-----------------|-----------------|--------|-------------------|
| | ROG | NO _x | SO _x | CO | PM _{2.5} |
| 20% RPS | 2,380 | 12,800 | 2,450 | 32,800 | 3,540 |
| 33% RES Alternative | 2,130 | 11,700 | 2,330 | 31,500 | 3,190 |
| Emission Reductions | 250 | 1,100 | 120 | 1,300 | 350 |
| Percent Reductions | 11% | 9% | 5% | 4% | 10% |

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Criteria Pollutants Emission Benefits (cont)

RES Alternative, HIGH Load Forecast

| Scenario | 2020 Statewide (tpy) | | | | |
|---------------------|----------------------|-----------------|-----------------|--------|-------------------|
| | ROG | NO _x | SO _x | CO | PM _{2.5} |
| 20% RPS | 2,920 | 14,700 | 2,650 | 35,100 | 4,230 |
| 33% RES Alternative | 2,620 | 13,400 | 2,510 | 33,500 | 3,910 |
| Emission Reductions | 300 | 1,300 | 140 | 1,600 | 320 |
| Percent Reductions | 10% | 9% | 5% | 5% | 8% |

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Community Impacts

- Renewable generation will displace fossil fuel generation
- Existing fossil fuel units will run significantly less
- The need for new fossil fuel generation will be reduced
- Overall, more renewables are expected to result in net benefits to impacted communities
- Small portion of the benefits may be lost due to fossil resources running when variable generation (wind & solar) is down

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Non-Air and Out-Of-State Environmental Impacts

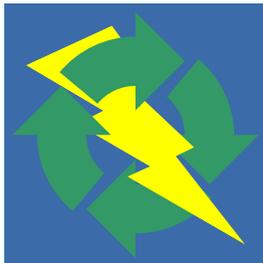
- Evaluate the non-air environmental impacts on land, water, biological, cultural, and visual resources
- Quantify out-of-state air impacts
- Analyze impacts from:
 - ✓ The proposed RES
 - ✓ No Project or BAU (20% RPS)
 - ✓ 33% RES alternative

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Next Steps

- Finalize results presented today
- Include public health impacts analysis
- Work with consultant to incorporate non-air and out-of-state environmental impacts



Questions: Environmental Impacts Analysis

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