



*California Environmental Protection Agency*

# **AIR RESOURCES BOARD**

## **Proposed Regulation for a California Renewable Electricity Standard (RES)**



**California Air Resources Board**

**September 23, 2010**

# Overview

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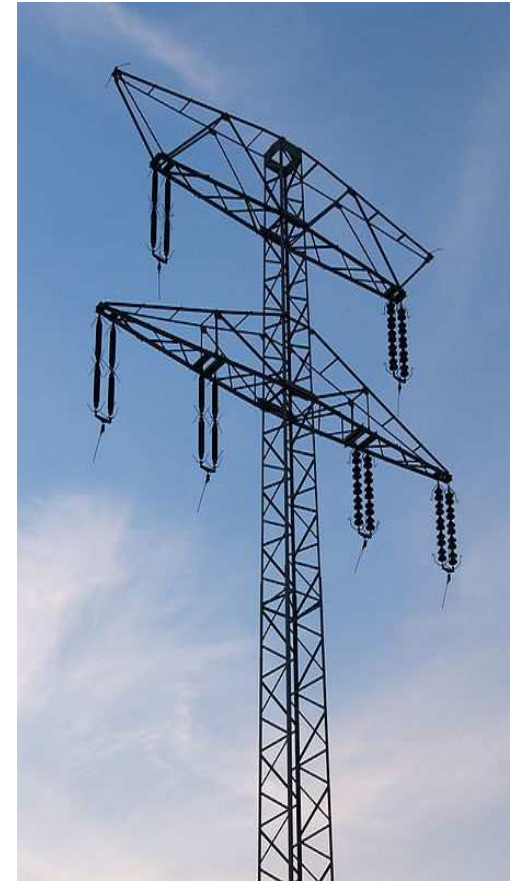
- ◆ Background
- ◆ Outreach
- ◆ Proposed regulation
- ◆ Air impacts
- ◆ Economic impacts
- ◆ Proposed 15-day changes
- ◆ Staff recommendation



# Background

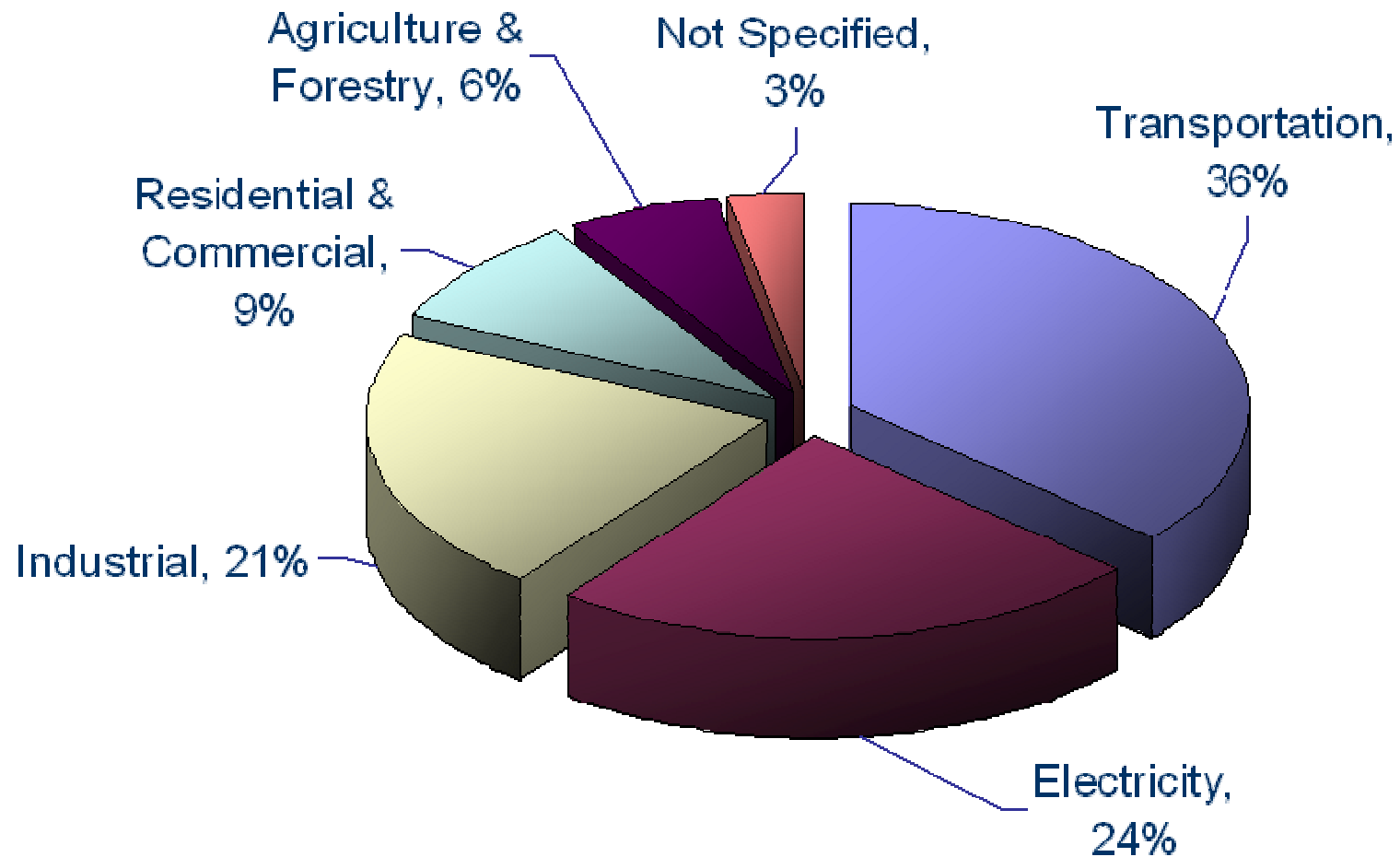
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- ◆ 2<sup>nd</sup> largest sector of greenhouse gas (GHG) emissions
- ◆ California's sources of electricity
- ◆ Key terms
- ◆ Existing renewable requirements
- ◆ Directives to increase renewables
- ◆ RES is a major emission reduction measure from the Scoping Plan



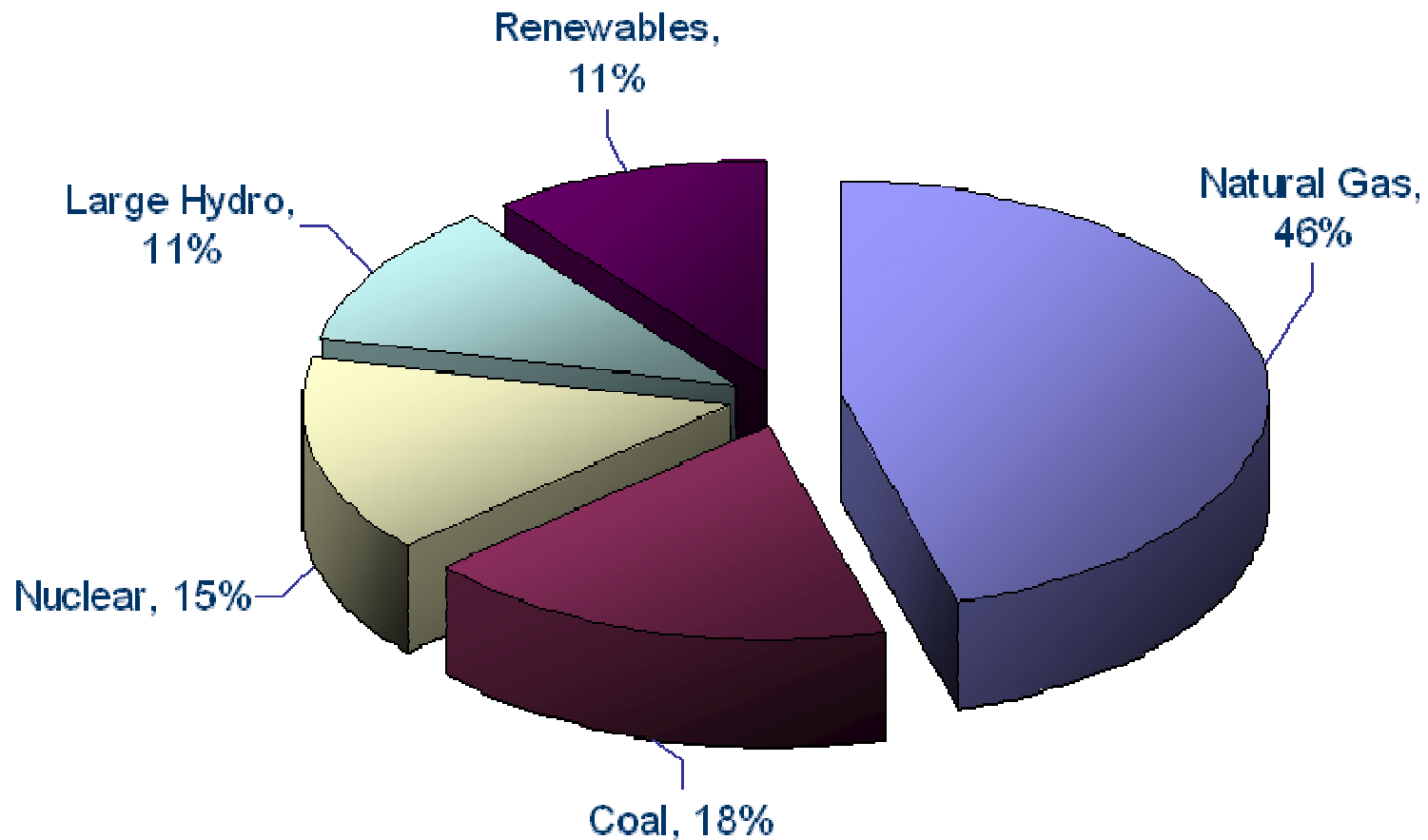
# 2008 GHG emissions by Sector (448 MMTCO<sub>2</sub>E)

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# California's Sources of Electricity, 2008

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# Key Terms

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## ◆ Primary Energy Agencies

- California Public Utilities Commission (CPUC)
- California Energy Commission (CEC)
- California Independent System Operator (CAISO)

## ◆ Investor Owned Utilities (IOUs)

## ◆ Publicly Owned Utilities (POUs)

# Existing Renewable Program

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- ◆ Administered by CEC and CPUC
- ◆ CPUC Regulated Entities
- ◆ POU's



# Directives to Increase Renewables

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- ◆ AB 32 Scoping Plan included measure to achieve GHG reductions through a 33% renewables program
- ◆ Executive Order<sup>1</sup> directs ARB to adopt a 33% renewables program under its AB 32 authority

1 – Governor's Executive Order S-12-09, issued on September 15, 2009



# ARB's Role

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- ◆ Environmental protection critical element in State's Clean Energy Future
- ◆ Authority under AB 32 and Health and Safety Code
- ◆ Maximize GHG benefits
- ◆ Authority to establish single standard for both IOUs and POU's



# RES Benefits

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- ◆ Reduces emissions of GHGs, criteria pollutants, and toxic air contaminants
- ◆ Co-benefits
  - Promotes energy security
  - Diversifies current energy supply
  - Supports creation of new green jobs
  - Builds on California's leadership as a center for green technologies

# Regulation Development and Public Outreach

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- ◆ Worked extensively with energy agencies
  - Technical analyses
  - Regulation and staff report
  - Grid stability
  - Integration with existing renewables program
  - Implementation
- ◆ Numerous public workshops and stakeholder meetings



# Proposed Regulation: Renewable Electricity Standard

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What Qualifies as a  
Renewable Resource?

- ◆ Wind
- ◆ Solar
- ◆ Geothermal
- ◆ Small hydroelectric
- ◆ Biomass
- ◆ Ocean wave, thermal, tidal
- ◆ Landfill and digester gas
- ◆ Biodiesel



# Goals of Proposed RES

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- ◆ Maximize greenhouse gas reductions
- ◆ Consistent requirements for IOUs and POUs
- ◆ Increase renewables to 33% by 2020
- ◆ Harmonize with existing renewables program:
  - Eligible resources
  - Certification requirements
  - Monitoring and reporting requirements
  - Verifying retail sales
- ◆ Ongoing partnership with CEC, CPUC, and CAISO

# Applicability

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- ◆ Regulated parties include:
  - IOUs
  - POUUs
  - Other providers
- ◆ Recordkeeping and reporting only:
  - California Department of Water Resources
  - Western Area Power Administration
  - Small utilities

# Renewable Targets

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- ◆ Provide flexibility in achieving targets
- ◆ Interim years (2012 – 2020)
  - Ramp-up to 33%
  - Multi-year compliance intervals
- ◆ Attain 33% compliance by 2020 and annually thereafter



# How are Renewable Targets Met?

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- ◆ Certificates are issued for each MWh of renewable electricity generated
  - Certificate program already exists (WREGIS)
  - Used in existing renewables programs
  - Can be banked or traded
- ◆ Utility submits certificates to demonstrate compliance



# Monitoring and Reporting

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- ◆ Utilities submit plan by July 2012 to achieve 33% renewables standard
- ◆ Annual Reports
  - RES obligation based on retail sales
  - Certificates submitted



# Enforcement and Penalties

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- ◆ ARB responsible for enforcement with CPUC and CEC consultation
- ◆ Penalties for violations assessed based on shortfall in retired certificates



# Periodic Program Reviews

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- ◆ ARB to conduct periodic reviews of program implementation with reports to the Board by:
  - December 31, 2013
  - December 31, 2016
  - December 31, 2018
  
- ◆ Coordinate reviews with energy agencies
  
- ◆ Comprehensive review may include adjustments to the program

# Air Quality Impacts

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- ◆ Significant reductions in GHG emissions
- ◆ Less construction of new fossil-fuel generation
- ◆ Existing fossil-fuel units will run less
- ◆ Reduces emissions of toxic air contaminants

# Significant Emission Reductions

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- ◆ 12 to 13 MMTCO<sub>2</sub>e of GHGs
- ◆ Criteria pollutants

Pollutant	Reduction (tons/year)
ROG	240 – 290
NO <sub>x</sub>	1,000 – 1,300
SO <sub>x</sub>	100 – 140
CO	1,200 – 1,600
PM <sub>2.5</sub>	310 – 330



# Economic Impacts

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- ◆ Annual program costs estimated to be about \$2.5 billion in 2020
  - Does not assume declining cost of renewables
  - Assumes natural gas costs will remain comparable to current levels
  
- ◆ Average incremental retail rate impact is less than one cent per kWh
  
- ◆ Less than 0.2% of projected gross state product in 2020

# Employment Impacts

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- ◆ Over 80 percent of new renewable energy resources are expected to be built in California
- ◆ Shift in jobs from sectors supporting fossil generation to renewable sectors
  - Solar Thermal
  - Solar PV
  - Wind
  - Geothermal

# Remaining Issues

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- ◆ **Enforcement provisions**
  - Based on standard penalty structure in Health and Safety Code
  - Potential penalties
- ◆ **Cost containment**
  - Long range cost
- ◆ **No restrictions on use of certificates**



# Proposed 15-Day Changes

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- ◆ Clarify process for assessing penalties
- ◆ Clarify that certificates are compliance mechanism
- ◆ Clarify property rights exclusion
- ◆ No penalties for 1<sup>st</sup> compliance interval
- ◆ Further align the renewables programs
- ◆ Extend compliance deadline to June 1<sup>st</sup>

# Implementation

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- ◆ Ongoing coordination with energy agencies
- ◆ Establish informal implementation workgroup



# Staff Summary and Recommendation

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## ◆ Proposed regulation

- Establishes a 33% renewable target
- Reduces 12-13 MMTCO<sub>2</sub>e of GHGs
- Significant co-benefits
- Flexible approach preserves benefits at lower costs

## ◆ Recommendation

- Approve staff's proposal with recommended changes