

Impacts of Renewable Fuel and Electricity Standards on State Economies

GOAL

Explore market, policy, and economic analysis issues surrounding state renewable portfolio standard (RPS) and renewable fuel standards (RFS).

BACKGROUND

Markets for renewable electricity and renewable transportation fuels are expanding rapidly due to a number of state-level initiatives, including RPS and RFS policies. NREL has led efforts supported by the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the United States Department of Agriculture (USDA) in helping states understand renewable policy design and implementation issues. The number of states with RPS policies reached 20 (plus the District of Columbia) in 2006; an additional three states had renewable electricity goals (Figure 1). On the renewable fuels side, RFS policies are being adopted and/or considered across the United States. While only two states had RFS policies in 2004, five additional states enacted policies and another 14 proposed RFS legislation in 2006 (Figure 2). Lessons learned from RPS design and implementation will help streamline, strengthen, and inform RFS policy design and implementation.

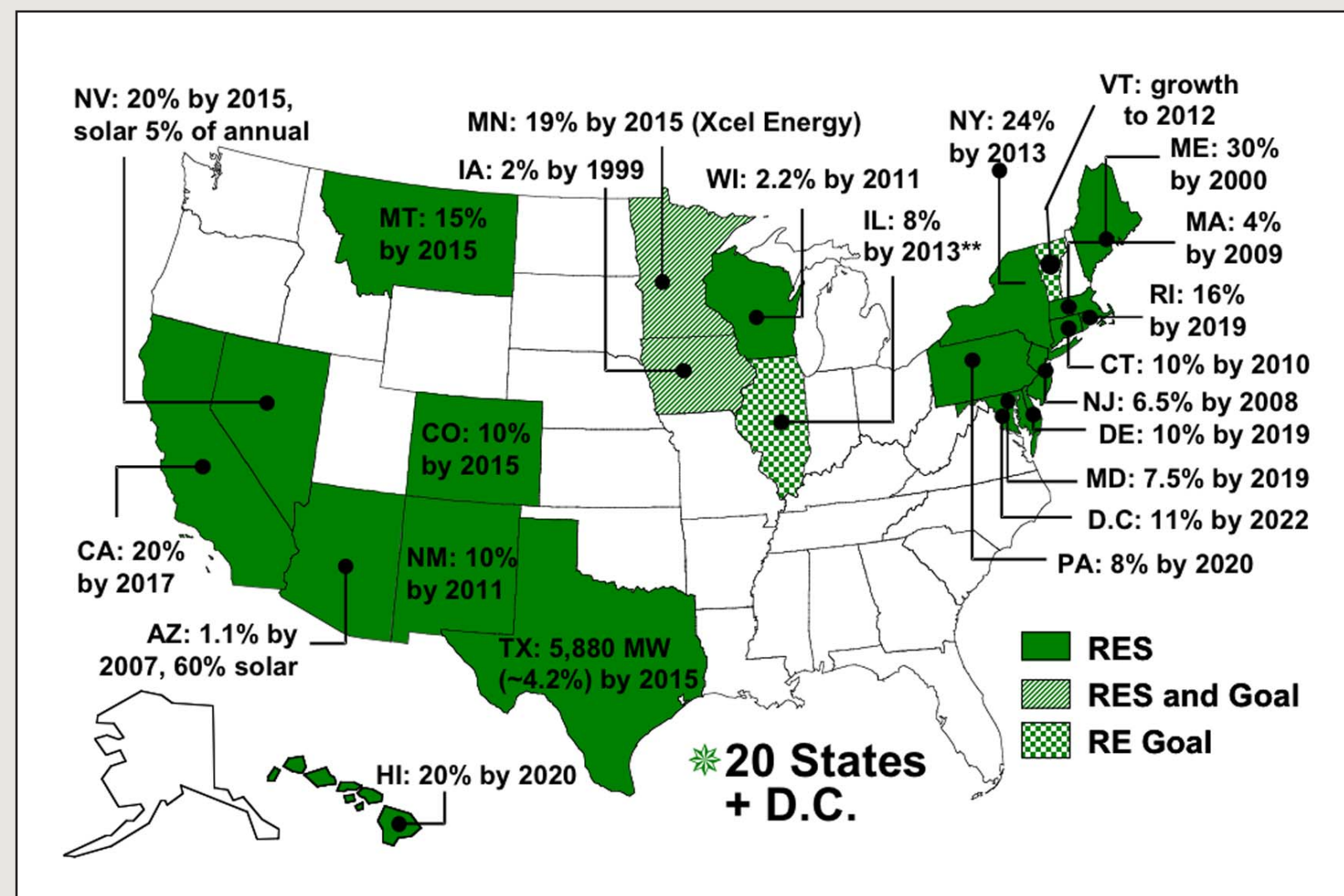


Figure 1: Status of RPS policies as of 2006, Source: Ryan Wiser, LBNL

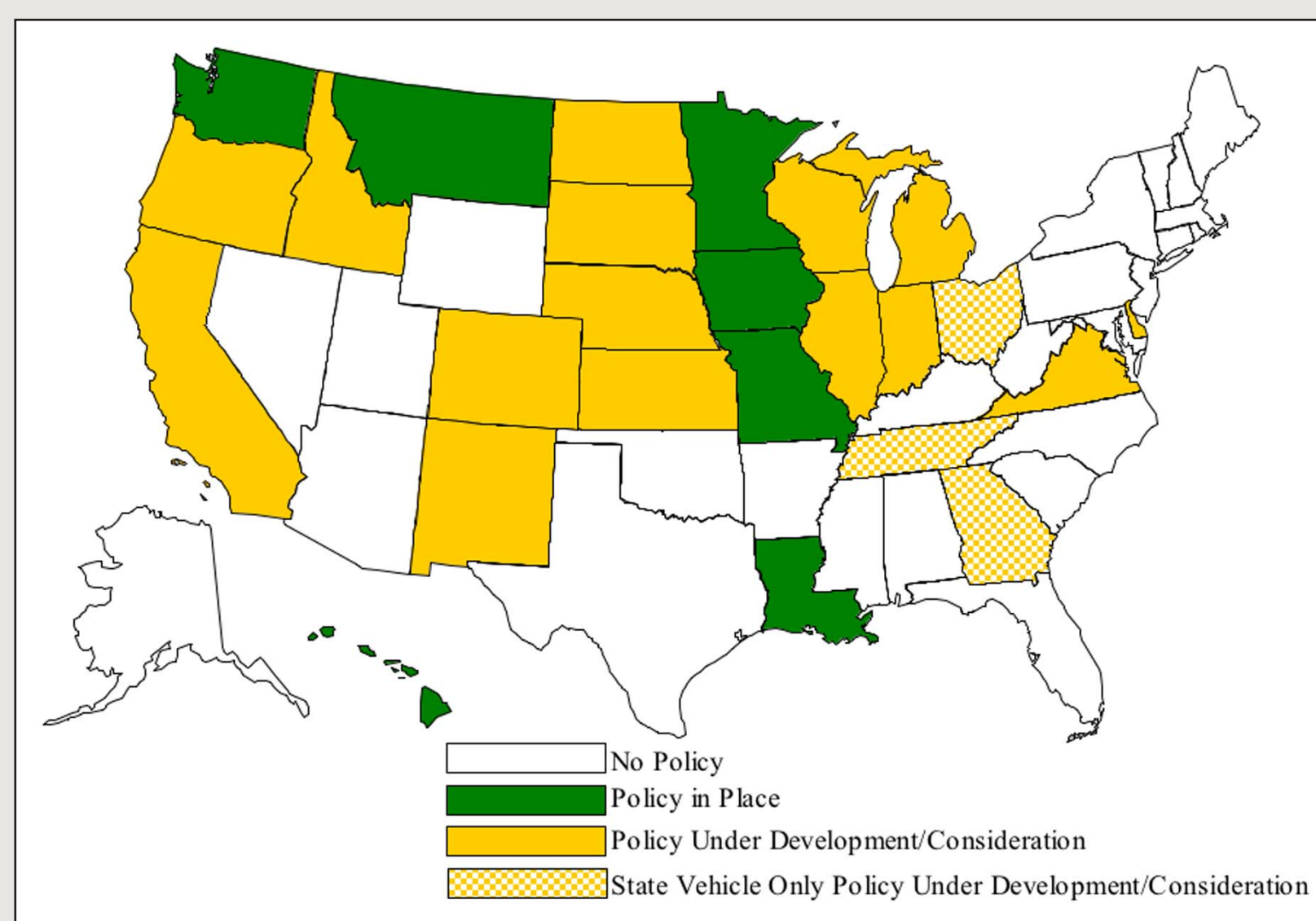


Figure 2: Status of RFS policies as of May 2006

RPS AND RFS POLICIES FACE SIMILAR POLICY CONSIDERATIONS

The considerations involved in designing and implementing successful energy-related state policy are similar in both the electricity and fuels sectors:

1. Are policies binding with clear enforcement mechanisms?
2. How much renewable energy generation or production capacity will result?
3. Can infrastructure challenges (e.g., siting, distribution, and transmission) be overcome to meet the standards?
4. Will these policies provide sufficient support to help facilities secure financing?

UNDERSTANDING THE TRANSPORTATION MARKET

NREL also has extensive understanding of the transportation and fuels market. Twenty-seven percent of energy used in the United States is used in the transportation sector (Figure 3) and of that, cars and light trucks – the primary targets of current RFS policies – are the primary uses of energy in the sector (Figure 4).

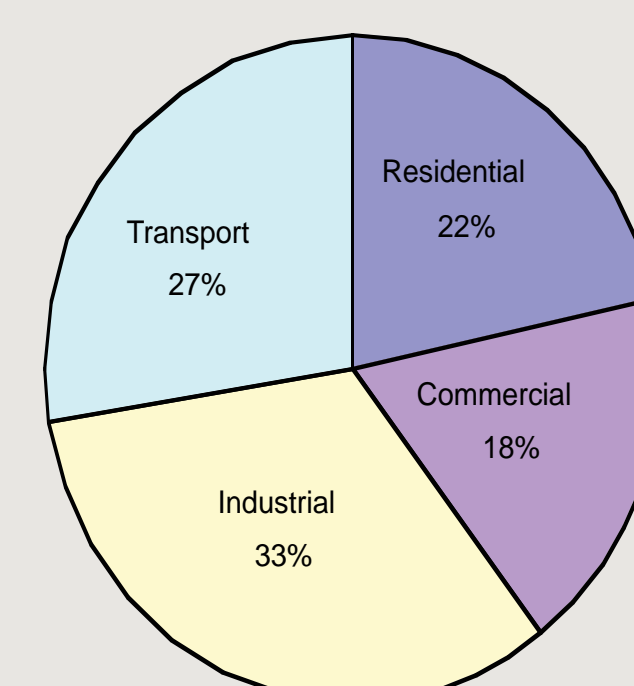


Figure 3: Energy use by U.S. sector
Source: EIA-Annual Energy Review 2004

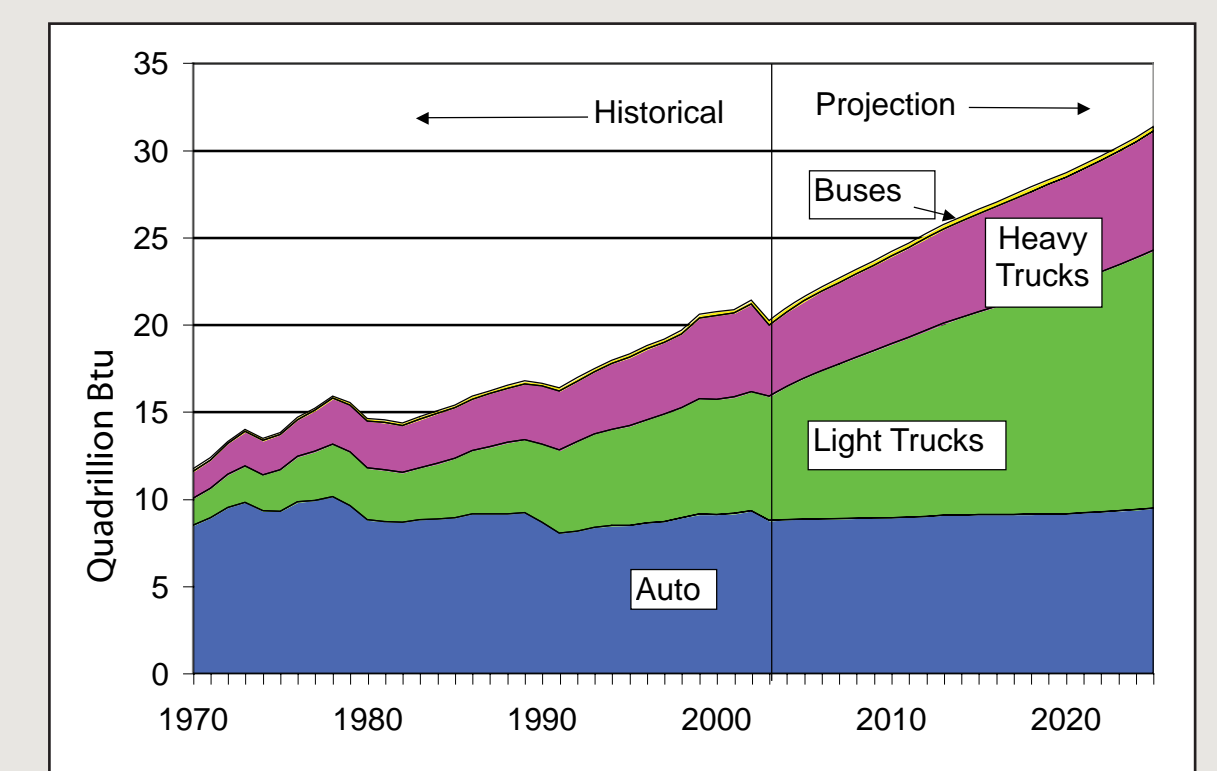


Figure 4: Highway transportation energy allocation by mode,
Sources: DOE-EIA, Historical – Annual Energy Review 2003,
Projection – AEO 2004

KEY ANALYSIS QUESTIONS

1. How effective have RPS policies been to date? What challenges are states facing in implementing RPS requirements?
2. Are there lessons learned from RPS policies that could inform best design and implementation practices of RFS policies?
3. Will 2% biodiesel fuel standard have any impact, considering current ultra-low sulfur diesel requirements?
4. What are the potential emission impacts of RFS standards, and is more testing on biofuel emissions needed?
5. Will RFS standards create market activity without including penalty provisions?

POTENTIAL FOR RFS POLICY DEVELOPMENT

NREL has completed an initial study to understand and determine best practices for designing RFS policies. In May of 2006, NREL completed a preliminary study of 10 existing and planned policies to determine possible oil avoidance impacts of RFS policies, with the result of more than 70 million barrels of oil being avoided cumulatively as a result of those policies (Figure 5). Further research is necessary to understand the potential benefits and impacts of these policies and to examine design and implementation issues.

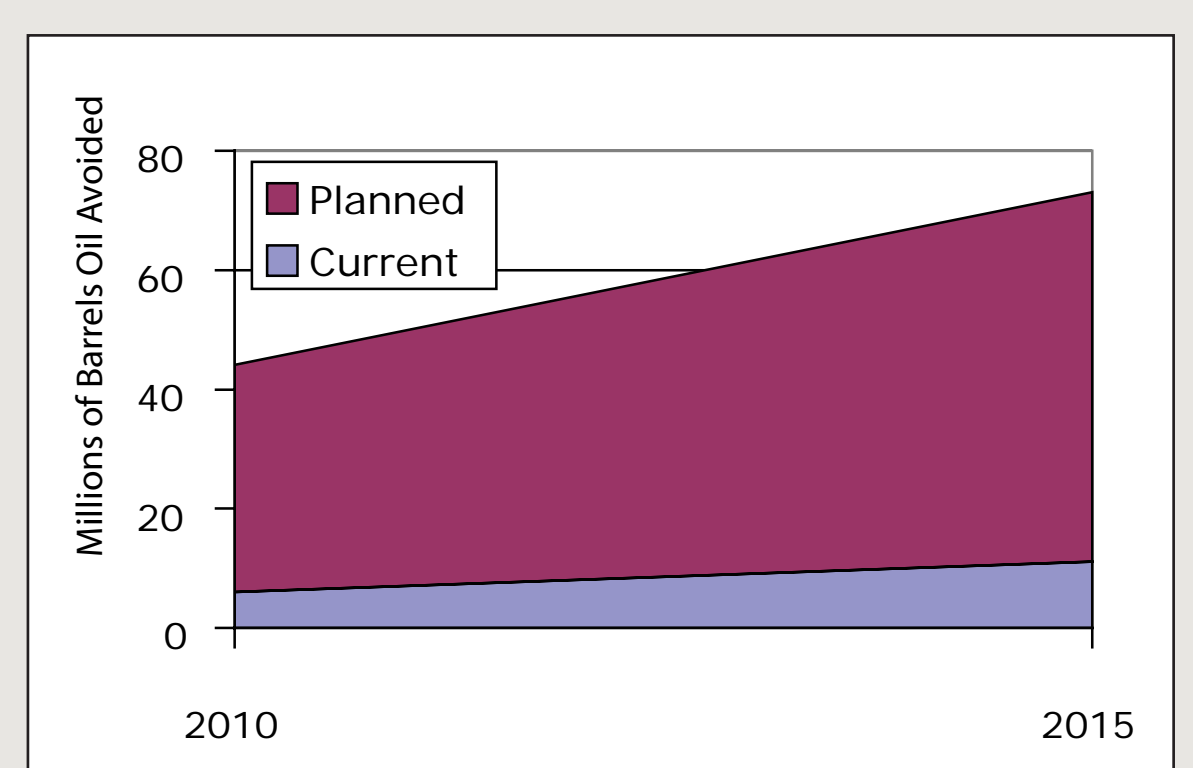


Figure 5: Projected million barrels of oil avoided from RFS policies in place and planned as of May 2006

CONTACTS

Elizabeth Brown, Karlynn Cory, John Brown, Lori Bird, and Blair Swezey
National Renewable Energy Laboratory (NREL)
1617 Cole Blvd.
Golden, CO 80401-3393
Elizabeth_Brown@nrel.gov, Karlynn_Cory@nrel.gov,
John_Brown@nrel.gov, Lori_Bird@nrel.gov,
Blair_Swezey@nrel.gov

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