

DSIRE Quantitative RPS Data Project

Introduction

DSIRE's *Quantitative RPS Data Project* provides quantitative information about state renewables portfolio standards (RPS) to support analysis efforts at the National Renewable Energy Laboratory (NREL). The RPS requirements are defined by year and by resource class and include other key data elements such as monetary penalties or alternative compliance payments, eligibility of new and/or existing facilities, the percentage of the state's electric load covered by the policy, comments to clarify data entries or assumptions, and an update memo to describe recent changes to the data.

Organization of the Data

The data in the attached spreadsheet is organized to capture key information and quantitative elements of state RPS requirements. The states are organized in rows, with the different policy elements for each state organized in columns. Each state row contains sub-rows that delineate the various components of each state's RPS. The left-most columns contain summary type information while the right-most columns contain the annual RPS compliance schedule as a percentage or as a number of megawatts (MW) depending on the state in question.

The document below provides definitions for each of the data fields, including examples to illustrate the treatment of actual RPS programs. RPS design details vary from state to state, and not all RPS design characteristics conform to neat definitions. Many of the fields are fairly straightforward (e.g. "start year"), but descriptions of special cases that are not well reflected in the numerical data fields can be found in the "Notes" section or as comments in the appropriate data field.

Before reviewing the datasheets, it is important to understand the different types of schedule definitions. Although each of these is described in the document below, they are central to an understanding of this tool so they also emphasized here.

The Treatment of Tiers: RPS policies are increasingly evolving to include tiers, or carve-outs for target resources or technologies, such as photovoltaics. Typically, RPS policies are described by their overall target, and then by their tier, i.e., "20% by 2020, with a 2% carve out for solar". This shorthand does not capture whether the carve-out is part of the 20% total, or additive to the total, and can sometimes lead to confusion.

In order to compare RPS policies on equal footing, this tool adopts a standardized approach to tiers. If an RPS has a resource-specific tier, and then a "main" tier in which all other resource types, then both are considered "tiers." Using the above example, and assuming that the 2% carve-out is a part of the 20% target, there are two different RPS schedules captured in the spreadsheet.

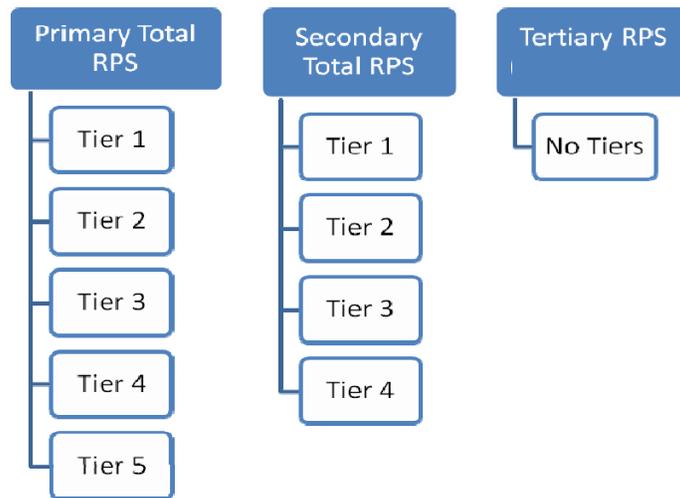
- Tier 1 – Tier 1 is not a tier that is explicitly spelled out in the legislation, but is the everything-else-but-solar tier. In this case, Tier 1 is 18% by 2020.
- Tier 2 – Tier 2 is the solar tier, which, in our example, is explicitly set forth in the enabling legislation. The solar tier is 2% by 2020. Together, Tier 1 and Tier 2 add up to the Total RPS.

The Treatment of Primary and Secondary RPS Requirements: In addition to breaking out each tier from the total RPS, the tool also distinguishes between Primary and Secondary RPS schedules. This occurs in

states such as Colorado, where there is one RPS schedule for investor-owned utilities (20% by 2020), and a separate schedule for electric cooperatives (10% by 2020). In the spreadsheet the Primary RPS (1) is listed first vertically (including all the tiers as discussed above), and is then followed by the Secondary RPS (2) which also contains any of the sub-tiers that may apply. Oregon is the only state that has *three* classes of utilities, each with a different standard. The “Tertiary RPS” section is included to accommodate this schedule. In this document the term “RPS type” is used generally to describe this distinction.

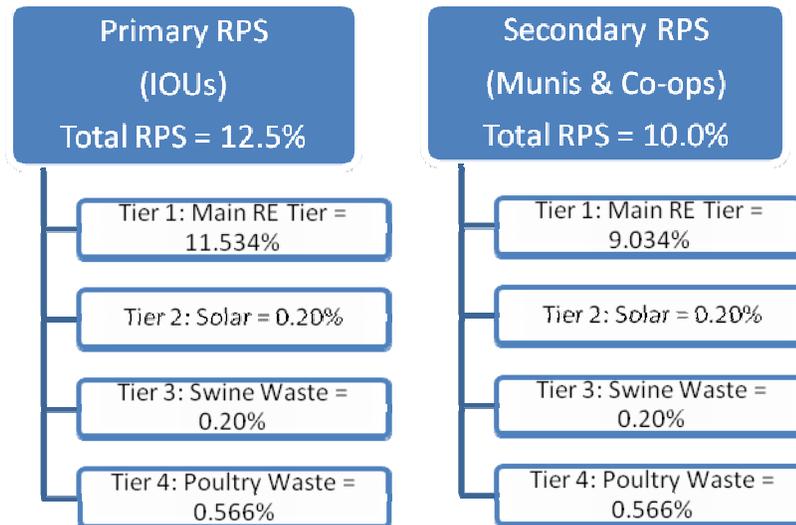
The figures below illustrate the basic structure of the RPS data presented in the spreadsheet.

Structure of the RPS Data



North Carolina Example

The figure below illustrates how the tiers are additive to the overall, or total, RPS, for each of the Primary and Secondary RPS requirements. There are specific set-asides for solar, swine waste and poultry waste within the overall RPS under both the Primary and Secondary standards. A “Main” renewables tier was created to represent the renewables other than the resources with specific set-asides.



The next section provides detailed descriptions of the data fields, beginning with the RPS elements and the details that are provided for each Tier. The data fields are the same for Primary, Secondary, and Tertiary RPS’s and each sub-Tier that falls within these separate standards.

Data Field Descriptions

STATE (NOTES AS COMMENTS): Name of state, hyperlinked to the Database of State Incentives for Renewables and Efficiency (DSIRE) summary of the policy. Each state also has a comments box attached to clarify data entries or assumptions made, including:

- Utilities/suppliers subject to Primary, Secondary, and Tertiary standards.
- Class of resources associated with Tiers 1 through 5.
- Information about the eligibility of energy efficiency for meeting compliance.
- Additional non-mandatory renewable energy goals.
- Cases where other utilities not subject to the standard must develop their own RPS.
- Other unique characteristics of the state policy as applicable.

MEMO NOTES & UPDATES: This field is used to indicate ALL changes made to the spreadsheet data. Each note includes a date and a short summary of the changes made and how they relate to the overall policy.

RPS TYPE^o (PRIMARY, ETC.): This column indicates the type of RPS described by further data columns to the right. The Primary RPS is indicated as a (1), the Secondary RPS by a (2), and so on. Only states which make different requirements for different utility types have multiple RPS types. Oregon for instance, is the only state that has a Primary, Secondary, and Tertiary RPS as described below.

Example: Oregon

1. Large utilities -- those with 3% or more of the state's load -- must ensure that a percentage of the electricity sold to retail customers in the state is derived from eligible renewable energy resources according to the following schedule:

- 2011: 5%
- 2015: 15%
- 2020: 20%
- 2025: 25%

PRIMARY RPS

2. Utilities with more than 1.5%, but less than 3% of state load must meet an RPS of:

- 10% RPS by 2025 and thereafter

SECONDARY RPS

3. Smaller utilities are subject to lower standards. Utilities with < 1.5% of state load must meet an RPS of:

- 5% RPS by 2025 and thereafter

TERTIARY RPS

TIER: This column breaks down each type of RPS into their constituent components or tiers. The “Tier” refers to requirements that a specified portion of the renewable energy obligation be met with certain resources or class of resources. A common example is a solar set-aside which mandates that a small percentage of the overall renewable energy target be achieved using solar resources. There may be several tiers within the RPS depending on the details of each state RPS.

The combination of RPS type and Tier results in the table format shown below, where each Tier is a component of the larger RPS Type. The details of each tier of each RPS type are then further described by the data fields to the right.

Example: Delaware

Delaware has a Primary and Secondary RPS, which use slightly different compliance schedules. Each RPS type in turn contains 3 identical resource tiers. The Primary RPS refers to the “general” RPS requirements that apply in the absence of the circumstances that qualify for the Secondary RPS. The Secondary RPS applies to wholesale renewable energy purchases for Standard Offer Service (SOS) entered into during 2005 and 2006 for the 2007, 2008 and 2009 compliance years. The three tiers are:

- Tier 1 = Non-solar, non-existing resources
- Tier 2 = Solar-electric resources
- Tier 3 = Existing resources

State (Notes as comments)	RPS Type (Primary, etc.)	Tier
Delaware	1	1
	1	2
	1	3
	2	1
	2	2
	2	3

The total RPS requirement, while not described in a separate data field, is the sum of the percentage requirements for each tier within an RPS type. Annual requirements for each tier of each separate RPS type are detailed under the heading of “Yearly Fractional Goals” or “Yearly Capacity Goals (MW)” located on the right side of the spreadsheet. The total RPS requirement for a given year can be arrived at in the same manner.

LOAD COVERED (%): The load covered indicates the percentage of retail sales that are covered by each type of RPS. Most state RPS policies do not cover 100% of the state load either because often some utilities are exempted from the RPS or because exemptions exist for some other portion of state load. The % of load covered does not change within the bounds of the RPS type. For instance, all tiers of a Primary RPS will have the same value for the load covered. For states with multiple RPS types, the percentage of load covered by the total RPS is the sum of the load covered by all RPS types added together.

Values are calculated using the most recent (2006) retail electricity sales data from the Energy Information Administration (http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html) based on the entities obligated to comply with the RPS as dictated by each state's RPS policy. Some entries also contain further explanatory notes as comments.

EXISTING RE ALLOWED (%): This column describes the percentage of renewable energy generated from existing RE facilities that qualifies for RPS compliance. The "Existing RE Allowed" = 0 if only renewable energy from new facilities is eligible (e.g. AZ, OH, WA). For states that allow renewables from both new and existing facilities to qualify or that do not specify a percent allowed from existing facilities, the % = 100. Additional notes provide clarification or comments regarding eligibility where applicable.

For states that specify a maximum percent of existing RE allowed, the value is provided in the field; additional notes describe exceptions or applicability. In addition, a separate "Tier" for existing resources (see below) is created if there is not already an explicit tier specified in the RPS. For example, in Delaware, 1% of the target may come from "existing" resources. This is effectively a tier, although it is not explicitly described as such in the law. Conversely, Class III and Class IV in New Hampshire are explicitly set forth as separate resource tiers for existing resources in the legislation. Note that some states (e.g. Wisconsin) may specify that only new generation is eligible to receive RE *credits*.

NEW RE DATE (mm/dd/yyyy): The date on or after which a renewable resource facility becomes operational to be considered "new" according to the RPS requirement. Note that this refers to new *facilities* rather than energy *generated*. Information in this field applies to Primary, Secondary, and Tertiary standards as well as all Tiers, hence the rows in the field are merged together. In cases where the "new" date varies by resource or facility size, explanatory notes are provided.

PENALTY or ACP (\$/MWh): Monetary penalty for non-compliance or Alternative Compliance Payment (ACP) for shortfalls of renewable energy under the RPS requirement. This value may or may not be the same for all Tiers of the RPS. A blank field indicates that no monetary penalty or ACP has been specified. Values that change over time are updated according to the applicable ACP schedule or the most recent data available in cases where the ACP is only specified after the end of a compliance period (e.g., Pennsylvania's 1st Tier 3 ACP). Comment boxes indicate the compliance year to which a specific ACP value applies and provide other explanatory notes on ACP levels.

CREDIT MULTIPLIER: The extra credit awarded to specific resources or applications for RPS compliance purposes. For example, in Delaware, "prior to 1/1/2007 electricity suppliers received 120% credits for energy generated by wind or solar." In Arizona, "extra credit multipliers, up to 200%, may be earned for early installation of certain technologies, in-state solar installation, and in-state manufactured content." This field indicates has a "yes" or "no" value to indicate whether or not a state awards extra compliance credits. Comments provide a comprehensive list and description of how the multipliers are applied.

DURATION (YEARS): Number of years the renewables % or capacity must be maintained after the target % or capacity is reached. Most state RPS policies require that the renewable energy % or capacity is maintained indefinitely, in which case "100" is recorded in the field. If there is no explicit requirement to maintain the target % or capacity after the target date is reached, the duration is indicated

as “0”. Tiers within an RPS sometimes have different *durations* after the target has been met. The following example of New Hampshire’s RPS illustrates this methodology.

Example: New Hampshire

NH’s RPS does not explicitly require that the annual targets will continue beyond 2025; therefore the overall duration (1° DURATION) = 0.

2008: 4.0%	0.0% Tier 1;	0.0% Tier 2;	3.5% Tier 3;	0.5% Tier 4
2009: 6.0%	0.5% Tier 1;	0.0% Tier 2;	4.5% Tier 3;	1.0% Tier 4
2010: 7.5%	1.0% Tier 1;	0.04% Tier 2;	5.5% Tier 3;	1.0% Tier 4
2011: 9.6%	2.0% Tier 1;	0.08% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2012: 10.7%	3.0% Tier 1;	0.15% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2013: 11.7%	4.0% Tier 1;	0.20% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2014: 12.8%	5.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2015: 13.8%	6.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2016: 14.8%	7.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2017: 15.8%	8.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2018: 16.8%	9.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2019: 17.8%	10.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2020: 18.8%	11.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2021: 19.8%	12.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2022: 20.8%	13.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2023: 21.8%	14.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2024: 22.8%	15.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4
2025: 23.8%	16.0% Tier 1;	0.30% Tier 2;	6.5% Tier 3;	1.0% Tier 4

Tier 1 Duration = 0 yrs.
 Tier 2 Duration = 11 yrs.
 Tier 3 Duration = 14 yrs.
 Tier 4 Duration = 16 yrs.

The shading indicates the Target Date; that is, where the Target RPS % occurs. The 1° Tier 1 Duration = 0 because the Tier 1 Target RPS of 15% occurs in 2025 and does not have to be maintained after that point as the RPS is currently written. However, the Tier 2 Target RPS % of 0.30% is achieved in 2014 must be maintained for 11 years – through 2025.

STARTING RPS (%): Percentage of retail electricity sales covered by the RPS that must be sourced from renewables during the start year (first compliance year). Note that this number *does not* account for the fact that the load covered by most RPS policies is not 100%.

STARTING MANDATE (MW): The capacity of renewables in megawatts (MW) required to be installed for the first compliance year. This field applies only to states that express their RPS standard in terms of installed capacity (MW). At the time of this writing, this included only TX, IA, and MI.

START YEAR (yyyy): The first compliance year for each tier of the RPS requirements. Years used in this field refer to the year that the compliance period *ends*. Most states specify a calendar year (i.e. January 1-December 31), but occasionally the start and end dates may have a different time frame. For instance, in NJ where the first compliance year ended on May 31, 2005, the start year is listed as 2005. In cases where a state has amended its RPS, the start date associated with the current law is provided.

TARGET RPS (%): Final renewables target as a percentage of retail electricity sales covered by the RPS. As with the “Starting RPS (%)”, this number *does not* account for the fact that the load covered by most RPS policies is not 100%.

TARGET MANDATE (MW): The capacity of renewables in megawatts (MW) required to be installed for the last compliance year. This field applies only to states that express their RPS standard in terms of installed capacity (MW). At the time of this writing, this included only TX, IA, and MI.

CUSTOMER SITED (%): Describes the total percentage of resources that must be derived from customer-sited resources as a percentage of retail electricity sales covered by the RPS. In a state such as Connecticut that has a specific customer sited tier (1° Tier 3), the value in this field will equal the total requirement for the applicable tier (e.g., 4% in Connecticut). In states where only a portion of a Tier is dedicated to customer-sited resources, the value will equal total Tier Target % multiplied by the percentage set aside for customer sited resources. The Arizona example below illustrates how this works.

Example: Arizona

2025 Target: 15.00% (30% DR = 4.5%)

1° Tier 2 represents the Distributed Resources (DR) set-aside.

1° Tier 2 Final %: 4.5% of retail sales

One-half of the distributed renewable energy requirement must come from residential applications.

Therefore, the “1° Tier 2 % Customer-sited” = 50% of 4.5% = 2.25%

This means that 2.25% of retail electricity sales must be derived from residential DR in the final compliance year in 2025.

TARGET YEAR (yyyy): The last compliance year for each tier of the RPS requirements. As with the start year, the values used in this field refer to the year that the compliance period *ends*.

YEARLY FRACTIONAL GOALS: These fields collectively detail the annual requirements for each tier of each state RPS as a fraction (1 = 100%) for the years 2000 – 2030. Blank fields indicated that there is no requirement for a particular tier during that year. This does not apply to IA or TX, which are defined by capacity targets (see below).

Yearly Fractional Goals										
2000	2001	2002	2003	2004	...	2026	2027	2028	2029	2030

The North Carolina Tier 4 (poultry waste, included in both the Primary and Secondary RPS) requirement is a special case not found in any other RPS policy. The target is defined by law as a megawatt-hour (MWh) goal, but for our purposes has been converted to a % using projections of retail electricity sales.

YEARLY CAPACITY GOALS (MW): These fields collectively detail the annual requirements for each tier of each state with a renewable energy capacity (MW) requirement. As of the writing of this guide, this method is only used in IA, TX, and MI.