Clean Peak Energy Standard (CPS):
Regulation Overview
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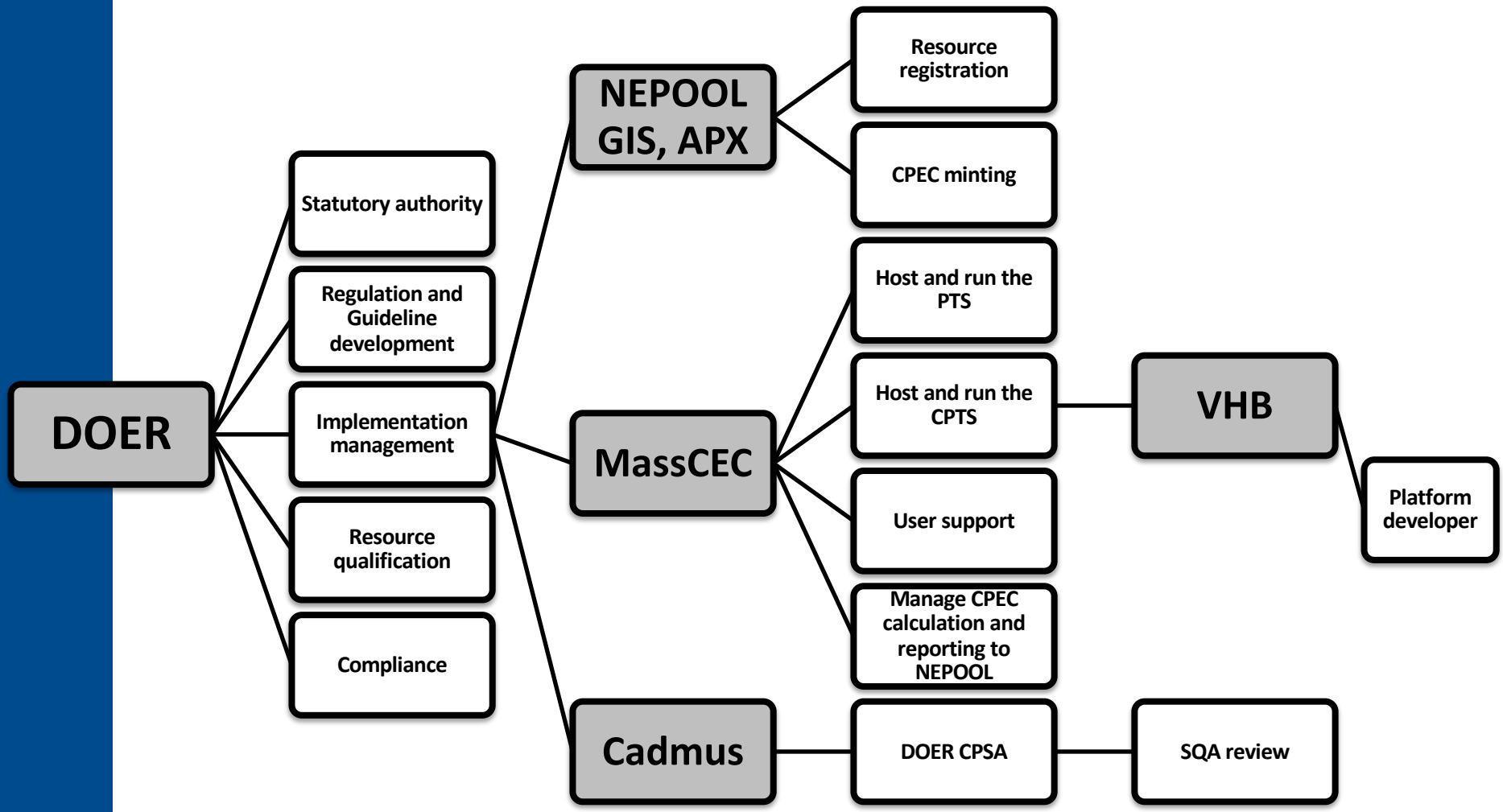
Creating A Clean, Affordable, and Resilient Energy Future For the Commonwealth

DOER
Massachusetts Department of Energy Resources

Current CPS Status

- **Summary:** The CPS, 225 CMR 21.00, is a regulation established market for renewables to invest in storage and load shifting technologies to reduce electric sector emissions and costs
- **Current State:**
  - Regulation Promulgated
  - Guidelines Released
  - NEPOOL GIS rules change and system updates in place
- **Remaining Milestones:**
  - Application portal for resources to qualify goes live 9/9/2020
    - CPS Statement of Qualification Training available at: https://www.masscec.com/production-tracking-system-1
  - Reporting platform goes live 10/15/2020
  - Establish EDC procurements

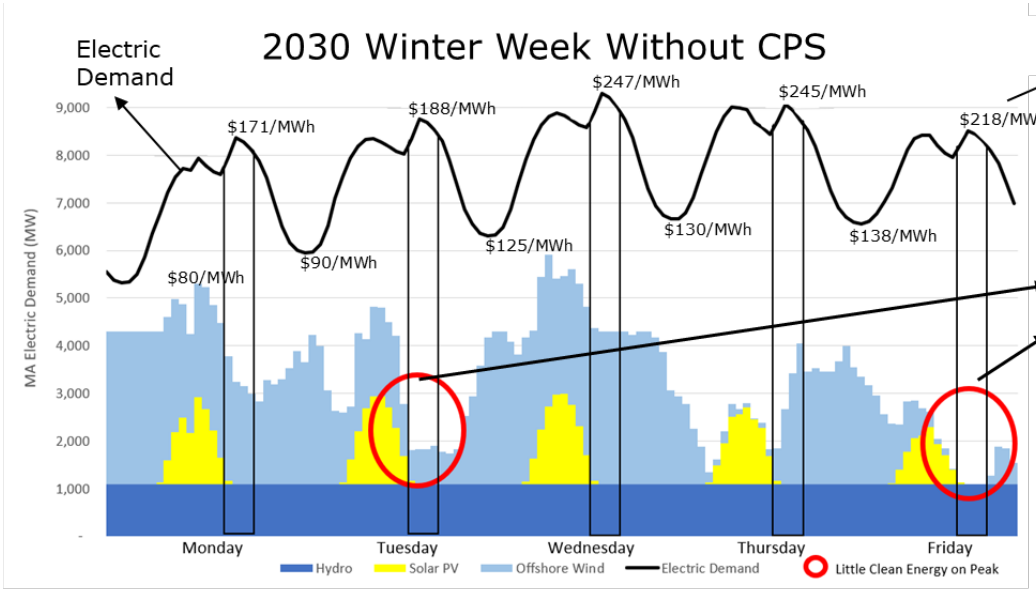
The CPS Team


DOER
Statutory authority
Regulation and Guideline development
Implementation management
Resource qualification
Compliance
NEPOOL GIS, APX
Resource registration
CPEC minting
MassCEC
Host and run the PTS
Host and run the CPTS
User support
Manage CPEC calculation and reporting to NEPOOL
VHB
Platform developer
Cadmus
DOER CPSA
SQA review

Overview

- CPS will be the Administration's signature clean energy policy addressing the impact of peak on price and emissions in Massachusetts in support of achieving GWSA goals
  - It is a market mechanism that will create revenue for resources, like energy storage, that can shift renewable energy
  - The market signal prioritizes:
    - Winter and summer season resource performance
    - Resources which enhance energy resilience
    - Performance coincident with actual monthly system peak demands
    - Resources that are new and provide incremental additional energy on peak beyond what already exists or is contracted for
- How it works?
  - CPS creates a requirement on all electricity suppliers to purchase a certain amount of Clean Peak Energy Certificates (CPECs)
  - Eligible resources that generate, dispatch or discharge energy during Seasonal Peak Periods will generate CPECs
  - An Alternative Compliance Payment (ACP) rate will bound the market price of CPECs

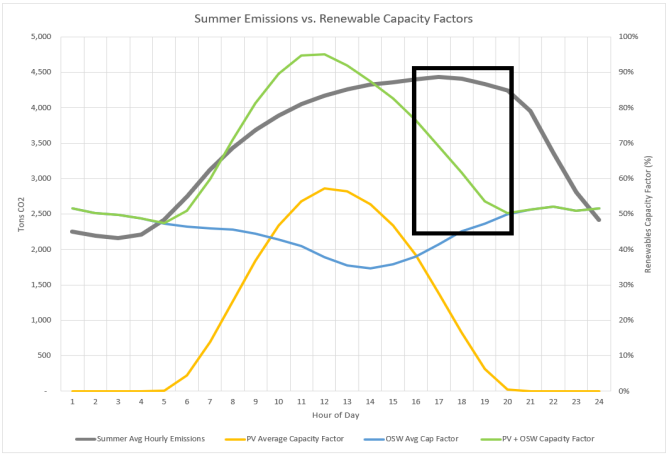
Status Quo Challenge to Resolve

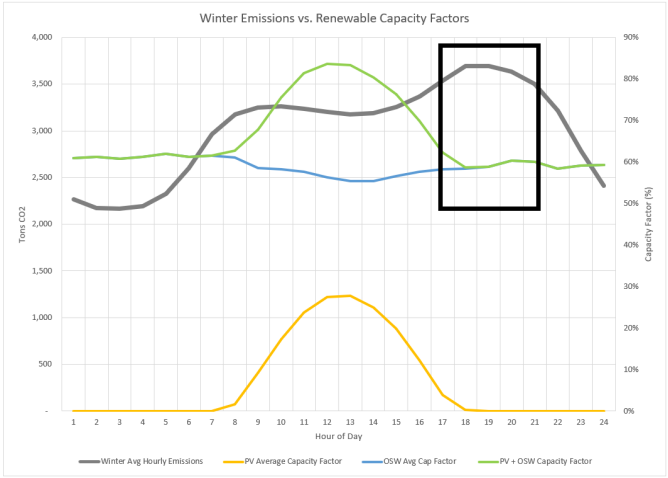


Pricing differentials reflect higher oil and gas use to meet peak

Significant renewable generation, but not during peak hours

Production profile for 1,090 MW Hydro, 3,200 MW Offshore Wind, 5,000 MW Solar PV





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The Regulation

- Authorized in statute – MGL Chapter 25a, Section 17
- Compliance obligation began 1/1/19 (0%)
- 2020 compliance obligation is 1.5%
  - Load exemptions for contracts
  - Can report any saved data on production to 1/1/20 to receive certificates
- Mirrors other portfolio standards (RPS, APS)
- Municipal Lighting Plants are exempt from the obligation and from program participation
  - Resources interconnected in MLP territory cannot qualify

Eligible Resources: Project Eligibility Criteria

- Four types of eligible resources:
  1. **New RPS Class I** eligible resources in operation on or after 1/1/19
  2. **Existing RPS Class I / Class II resources that are paired with a Qualified Energy Storage System**
  3. **Qualified Energy Storage Systems** operating to primarily store and discharge renewable energy
  4. **Demand Response Resources**
- Resources must be interconnected with the Distribution System or Transmission System in the Commonwealth of Massachusetts. Resources interconnected with the Transmission System must be delivered to the Commonwealth of Massachusetts
- Resource performance must be directly measurable and verifiable

Eligible Resources: New RPS Class I

- New RPS Class I in operation after 1/1/2019 are eligible to qualify and participate
- Upon qualifying a new RPS Class I, all electricity delivered by the resource during Seasonal Peak Periods will be eligible to generate CPECs

- New RPS Class I resources which receive a contract as a result of state policy will be subject to the Contracted Resource Multiplier discussed in the CPEC section below
  - Note, any paired storage will not be subject to the Contracted Resource Multiplier but may be subject to the SMART ES Resource Multiplier

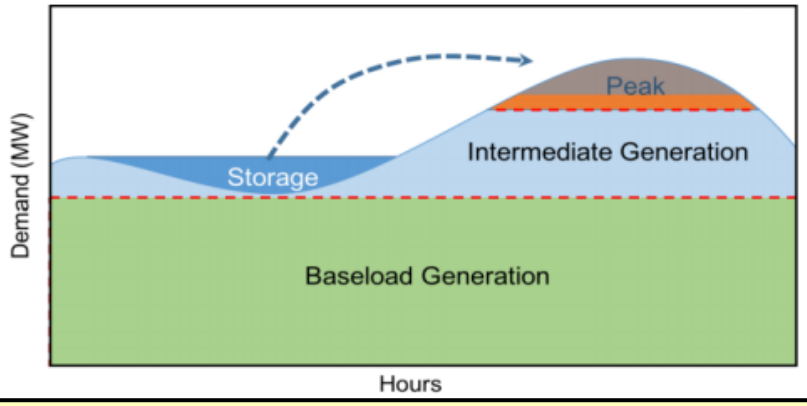
Eligible Resources: Existing Class I/II Renewables Paired with Storage

- RPS Class I/II resources in operation prior to 1/1/2019 are eligible to qualify and participate **if** they pair new Qualified Energy Storage Systems with their resource
  - The Qualified Energy Storage System paired with the resource must be at least:
    - 25% of the nameplate power of the facility; and
    - Have a minimum 4-hour duration of storage

- RPS Class I/II resources in operation prior to 1/1/2019 will be subject to the Existing Resource Multiplier discussed in the CPEC section below
  - Note, the paired storage will not be subject to the Existing Resource Multiplier but may be subject to the SMART ES Resource Multiplier

Eligible Resources: Qualified Energy Storage Systems

- "Energy storage system", as defined in section 1 of chapter 164 of Massachusetts General Law
- Commenced commercial operation or provided incremental new capacity at an existing storage system after 1/1/2019
- Operates primarily to store and discharge "renewable energy", as defined in section 1 of chapter 164 of Massachusetts General Law



Energy storage will play a critical role within the CPS.

Eligible Resources: Qualified Energy Storage Systems

- Options for a resource to demonstrate it serves to primarily store and discharge renewable energy will include:
  1. Co-Location with an RPS Class I/II resource
  2. Operational or contractual pairing with a non-co-located RPS Class I/II resource
  3. Charging coincident with designated Qualified Energy Storage System charging periods given the following:

	Energy Storage Charging Windows	
Clean Peak Season	Solar-Based Charging Hours	Wind-Based Charging Hours
Winter	10am - 3pm	12am - 6am
Spring	8am - 4pm	12am - 6am
Summer	7am - 2pm	12am - 6am
Fall	9am - 3pm	12am - 6am

Hours when renewables are at their highest percent of the generation mix.
If storage is charging during these hours and discharging during peak, they are shifting renewable energy

4. Operational schedule in the Qualified Energy Storage System Interconnection Service Agreement demonstrating resolution of intermittency-based power issues

Eligible Resources: Demand Response Resource

- Demand Response Resource
  - Must be able to measure and verify the reduction in demand for CPEC generation
  - May be an aggregate of multiple technologies and multiple locations
  - May include energy storage, electric vehicle charging infrastructure, and all other responsive electric loads for which the response can be measured and verified

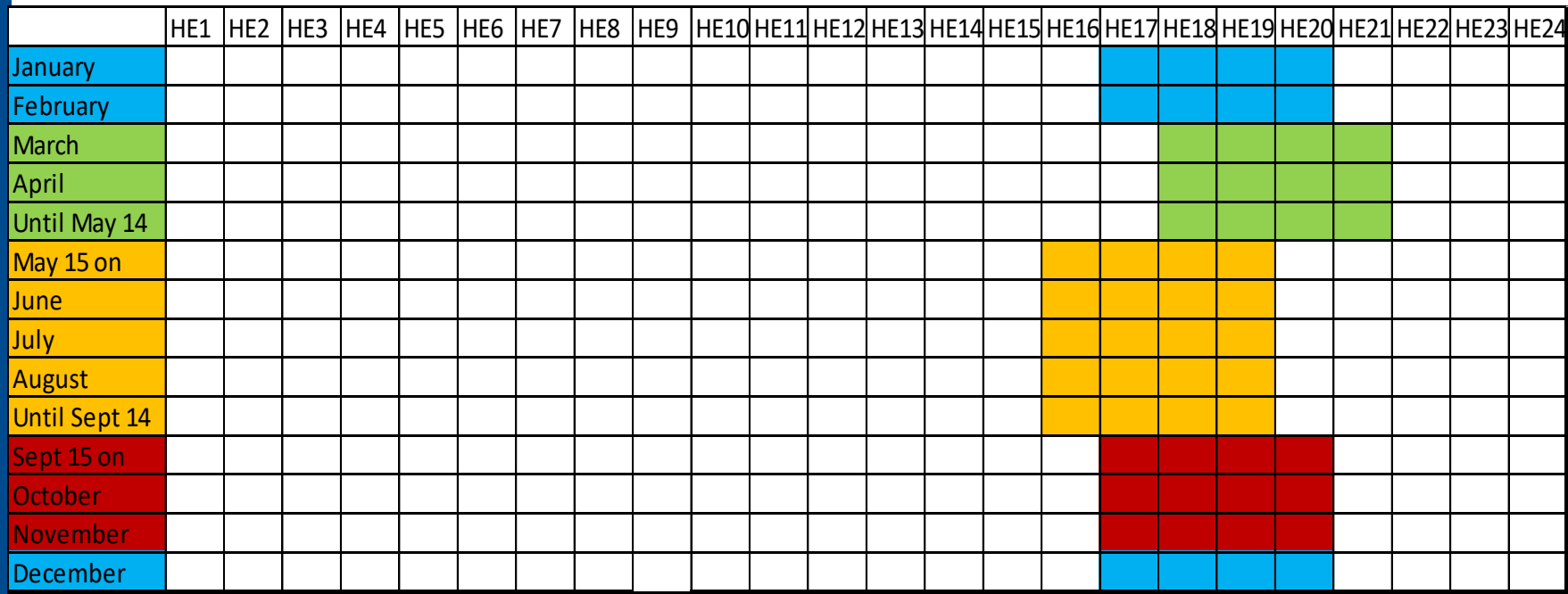
- Per statute, must be reduction in demand/ consumption; generation is not eligible

Clean Peak Seasons

- The statute requires that daily time windows be established for each of the four annual seasons for when net demand of electricity is the highest
- Stakeholders suggested matching seasons with weather and peak demands instead of strictly following the meteorological seasons
- The DOER has established the CPS seasons as:
  - Spring: March 1 – May 14
  - Summer: May 15 – September 14
  - Fall: September 15 – November 30
  - Winter: December 1 – February 28

Seasonal Peak Periods

- The DOER establishes the following initial Seasonal Peak Periods, with each totaling 4 hours:
  - Winter: 4pm – 8pm
  - Spring: 5pm – 9pm
  - Summer: 3pm – 7pm
  - Fall: 4pm – 8pm



Clean Peak Certificates: CPEC Generation

- A qualified Clean Peak Resource will generate Clean Peak Energy Certificates (CPECs) according to the performance of the Clean Peak Resource over the duration of the Seasonal Peak Period of a particular day, with appropriate multipliers applied
- On a day which has the Actual Monthly System Peak, the performance of the resource in the Hour of Actual Monthly System Peak demand is used to calculate the number of additional CPECs
- All CPECs are minted following the receipt and verification of the performance of qualified participating facilities for the month

CPEC Multipliers

- DOER is proposing the use of "multipliers" to align generation of CPECs with time periods and resource attributes of highest impact
  - Multipliers adjust the number of CPECs a resource receives for each MWh of energy generated during the peak
- Seasonal Multiplier
  - Summer/Winter 4x, Spring/Fall 1x
- Actual Monthly System Peak Multiplier
  - 25x for performance coincident with highest single hour of demand in the month
- Resilience Multiplier
  - 1.5x provided to resources which increase energy resilience to outages

CPEC Multipliers

- Existing Resource Multiplier
  - 0.1x applied to existing renewable resources
- Contracted Resource Multiplier
  - 0.01x applied to state contracted renewable resources
- SMART ES Resource Multiplier
  - 0.3x applied to SMART ES resources

- Future Consideration: Distribution Circuit Multiplier

- Four-year built-in multiplier review starting in 2025

CPEC Procurements

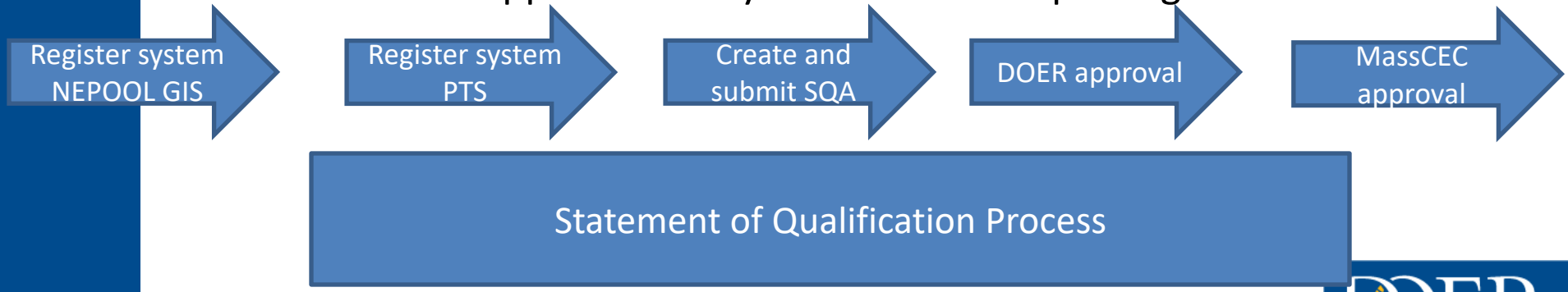
- The statute enables DOER to establish a process for the EDCs to competitively procure CPECs through long term contracts

- Procurement Objectives:
  - Provide revenue certainty for projects
    - Specifically projects without access to other long-term incentives (e.g. hydro, storage, AD, etc.)
  - Reduce financing costs of CPS resources
  - Increase market participation at a lower cost to ratepayers

- Intend to host a stakeholder conference to discuss merits of a tariff-based CPEC-only procurement mechanism as compared to contracts

Statement of Qualification Application SQA Process

- Register resource with NEPOOL GIS
- Log into the PTS
  - Complete Online Registration (OLR) application
  - MassCEC reviews application and registers system
- Log into the CPTS
  - Import registered system into the CPS SQA
  - Complete SQA with additional program information
  - DOER reviews and approves system for the CPS Program
  - MassCEC approves the system for CPTS reporting



Reporting Process

- System's production data will be collected through auto reporting
  - Currently working on the tools to report to an API
  - Reporters need to demonstrate ability to submit production data through the API
- Open Monthly Reporting Windows
  - Weekly; Biweekly; Monthly production data upload
- Monthly Period closes the 5th day of each month
  - MassCEC reconciles reported production
  - MassCEC reports monthly to NEPOOL GIS
  - NEPOOL GIS generates CPEC quarterly