# JuiceBox™ Quick Guide

## *Timeline*

The timeline shows how parameters change through time, and for this course is set up to extend through the year 2025.

The buttons below are used to select what is displayed on the timeline.

Peak Capacity (MW) – this is the maximum amount of power available for use during times of peak demand. Dashed line = expected growth in peak power demand.

Generation (MWh) – this is the total amount of energy generated per year. Dashed line = expected growth in overall energy demand.

$CO_2$ Emissions (tons) – this is the annual amount of $CO_2$ released (note that we are neglecting other pollutants in this exercise). Dashed line = present $CO_2$ emissions.

Cost per kWh (U.S. cents) – this is the average retail cost of electricity (1 cent = $0.01). Dashed line = present cost (12 cents per kWh).
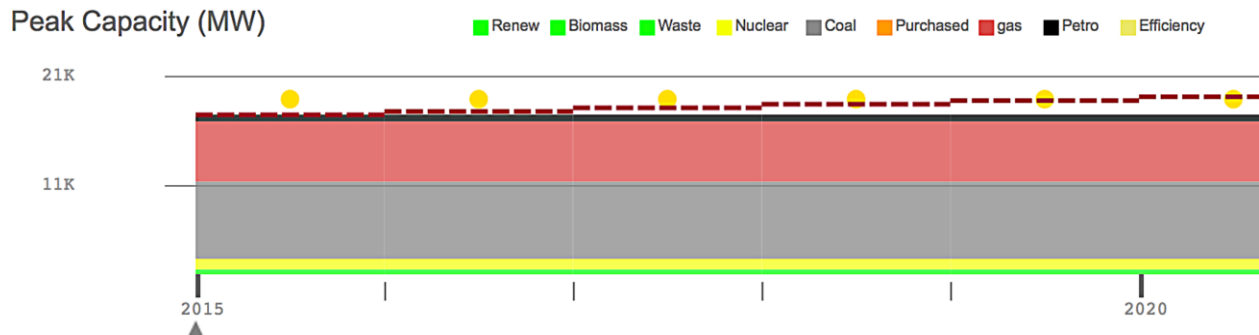
***NOTE:*** By rolling the cursor over the yellow circles you can see the numerical values associated with each time point.

## Power Sources

As shown on the map, the default simulation is based on a variety of different power sources, including coal-, gas-, and oil-fired power plants, a nuclear power plant, and renewable power facilities. You may modify existing facilities by double-clicking on the icons on the map, bringing up a Power Plant menu for that facility.

For this exercise, the Power Plant menu will be used to remove existing facilities. By clicking on the "Set Retirement", you can designate when the facility should be removed from operation.



| Power Plant Projection | |
|---|---|
| Coal - Large | |
| Fuel | Coal |
| Installed Capacity (MW) | 7063 |
| More Info | coal videos |
| ZoomTo | |

| Performance for Year 2015 | |
|---|---|
| Peak Capacity (MW) | 6,709.85 |
| Generation (MWh) | 53,494,319 |
| Capacity Factor (%) | 86.46 |
| Fuel Mix (%) | -- |
| Cost (c/kWh) | 4.84 |
| CO2 (tons) | 56,888,319.46 |
| SO2 (tons) | 40,537.99 |
| NOx (tons) | 21,620.26 |
| Edit Construction | |
| Additions | -- |
| Install Additions | |
| Available Year | 2000 |
| Retirement Year | -- |
| Set Retirement | |

## Toolbox

The toolbox is used to add new capacity to the grid. Clicking on this brings up a menu in which you can chose between various different generation options. You can also use the slider bars to designate their capacity, and the year they come online.





## Solution Bar

After you have made a change you must recomputed the simulation. Simply click once on the "Solve" bar to do an update. Doing this will renew the plots shown on the Timeline.