

# Recognition of available capacity to resolve market infeasibilities in the EIM

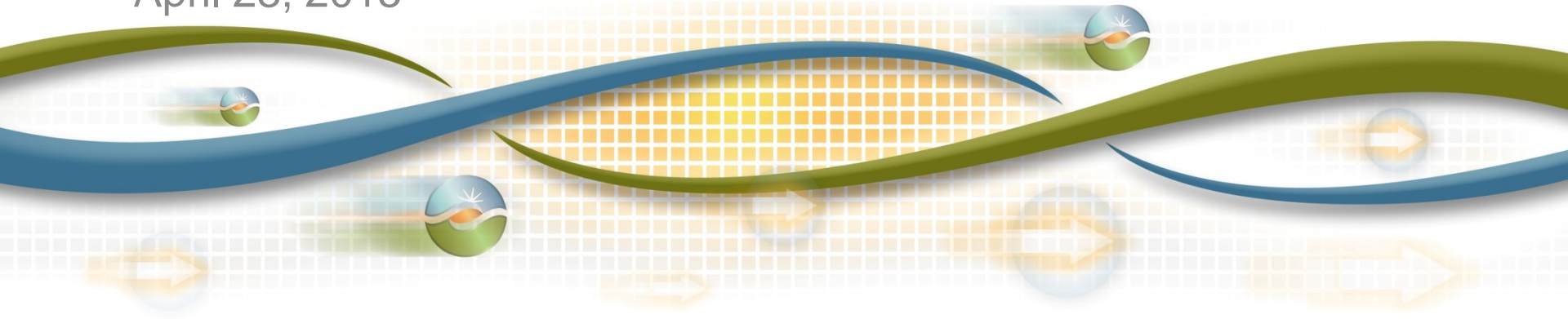
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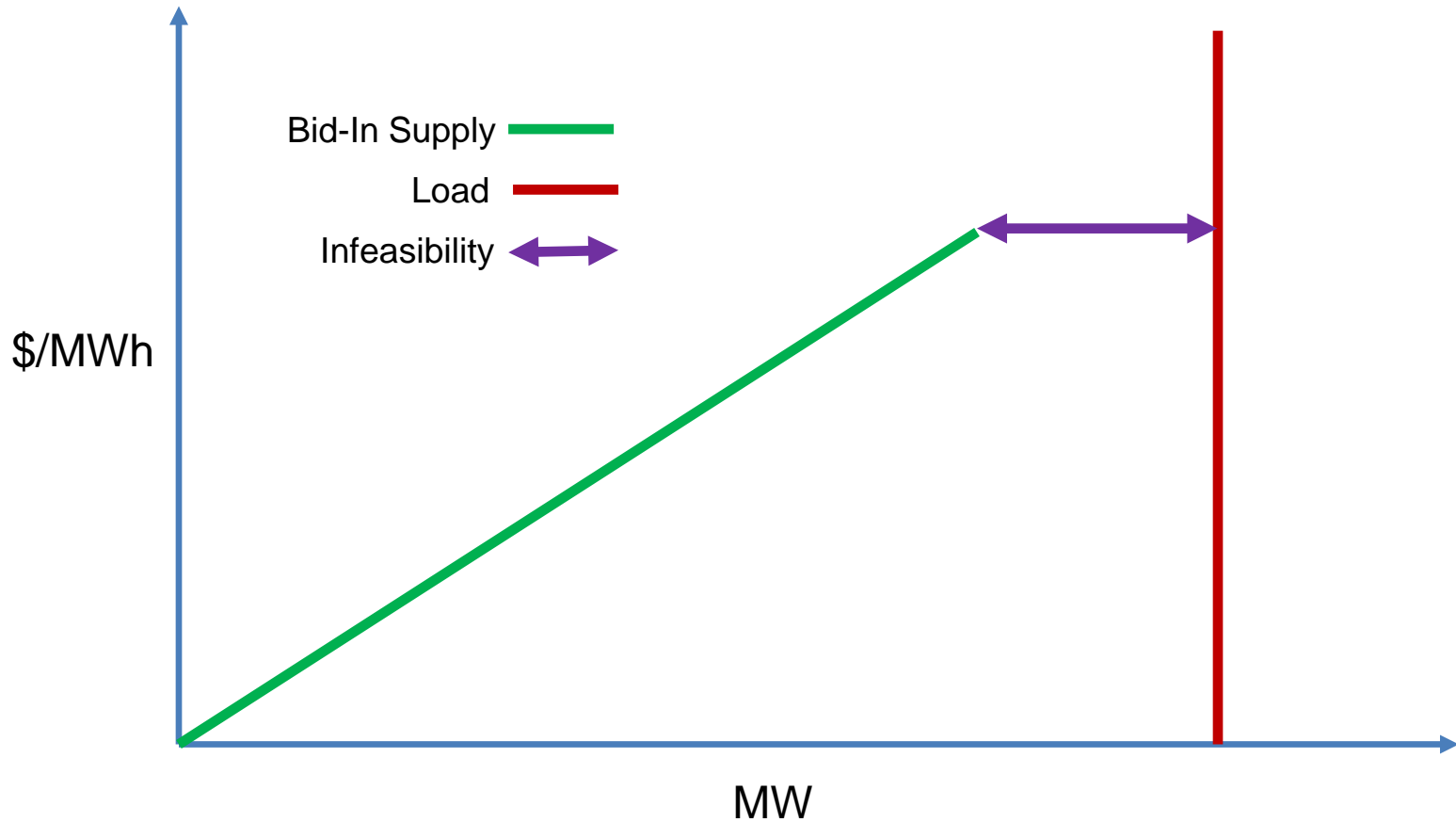
April 28, 2015



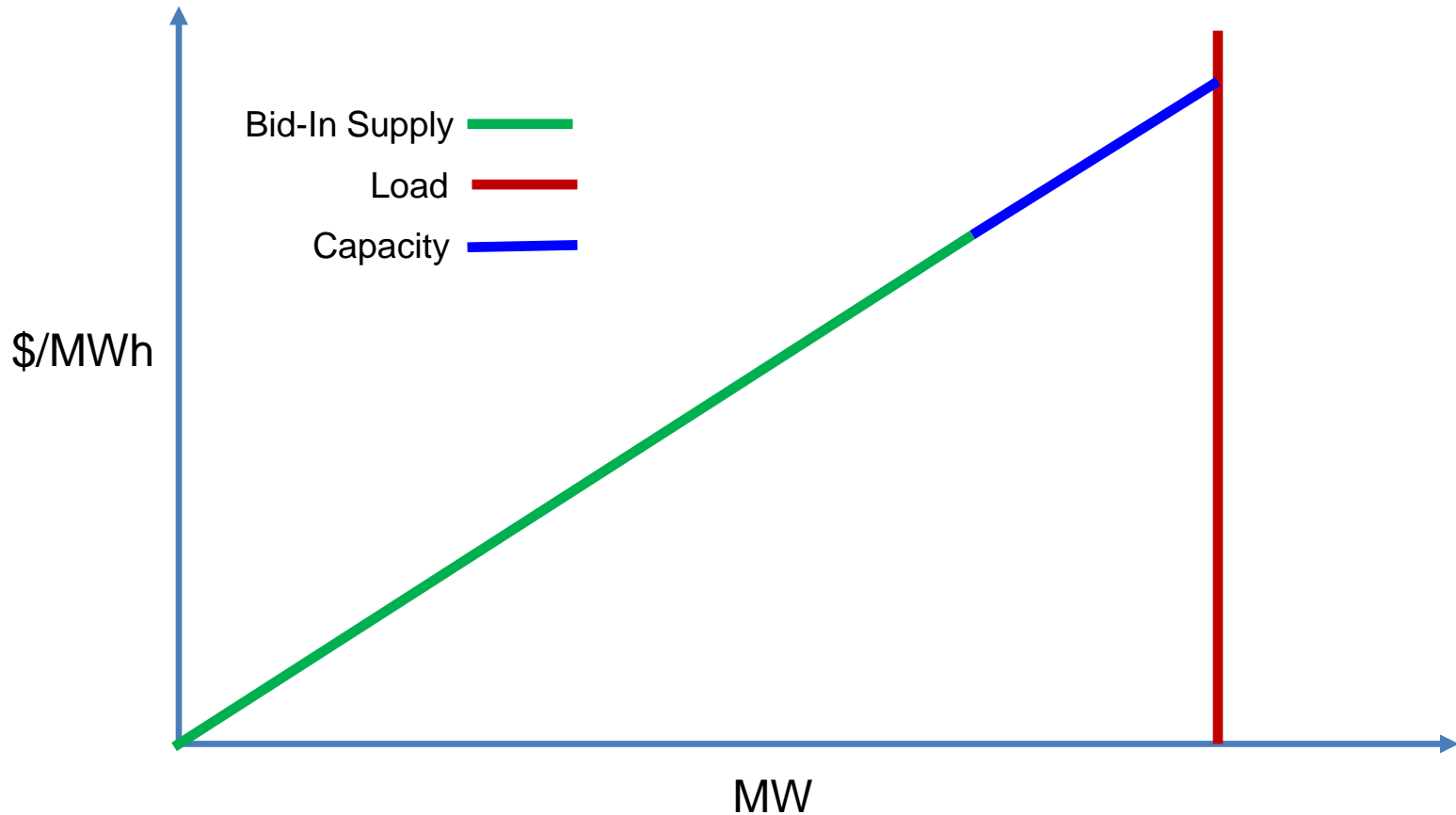
# Objective of proposed design

- Recognize available capacity when there is a market infeasibility in an EIM BAA
- Available capacity is not used to support EIM transfers to other BAAs in the EIM
- Available capacity is released at the resource location to ensure congestion is resolved

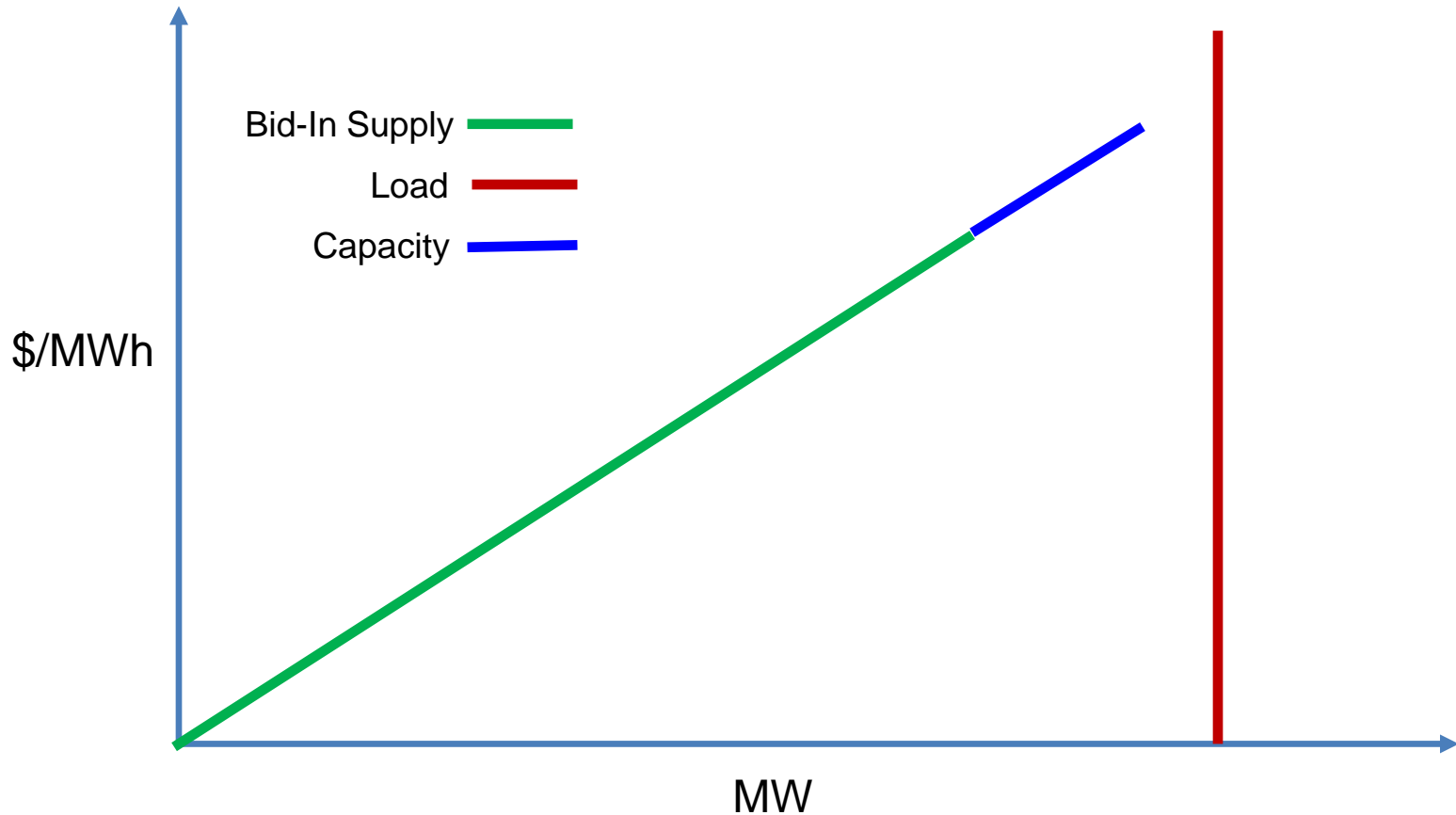
# Current design prices infeasibility at the power balance relaxation parameter, not recognizing EIM BAA's available capacity



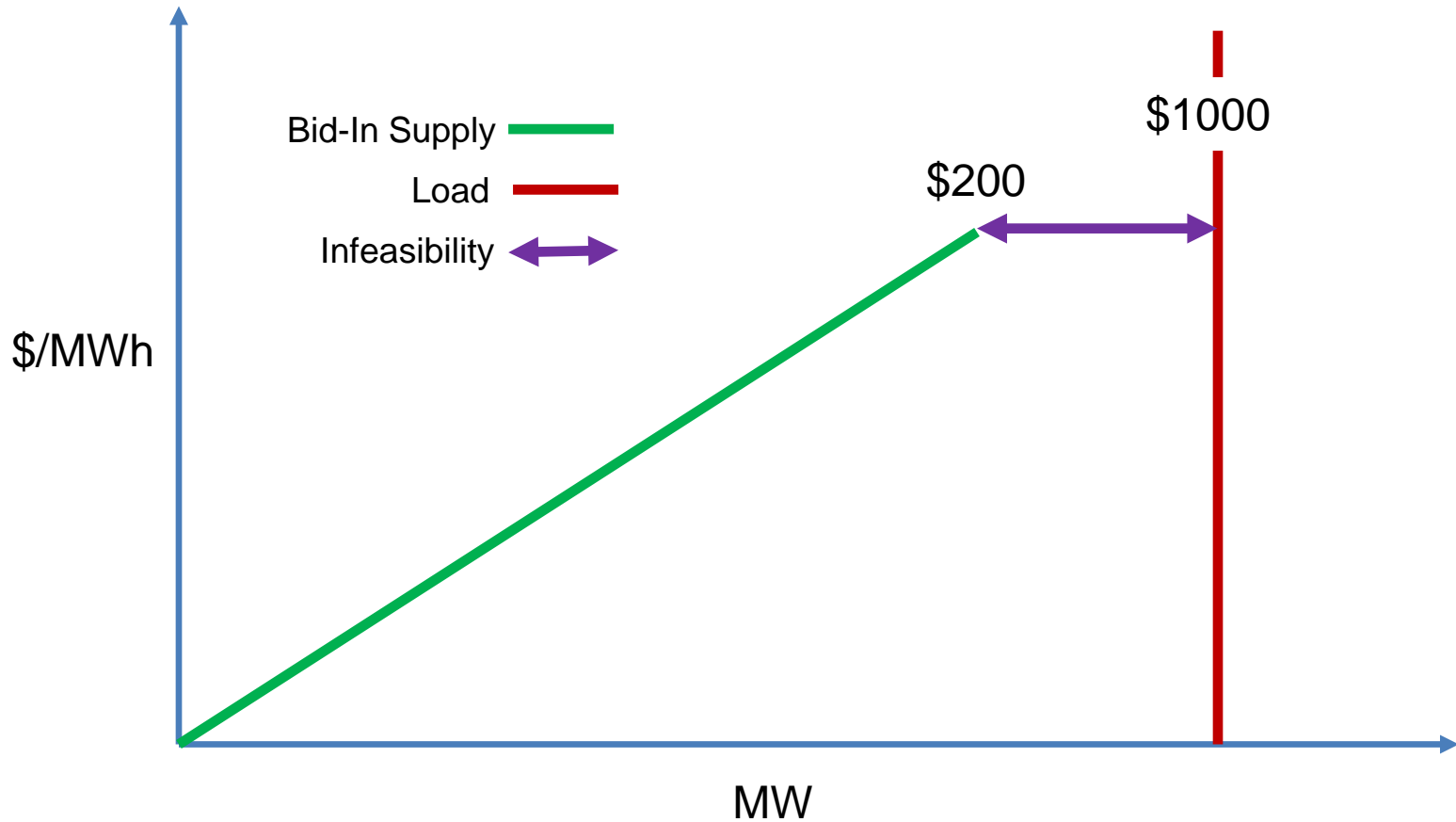
# Release available capacity equal to the infeasibility determined in the scheduling run



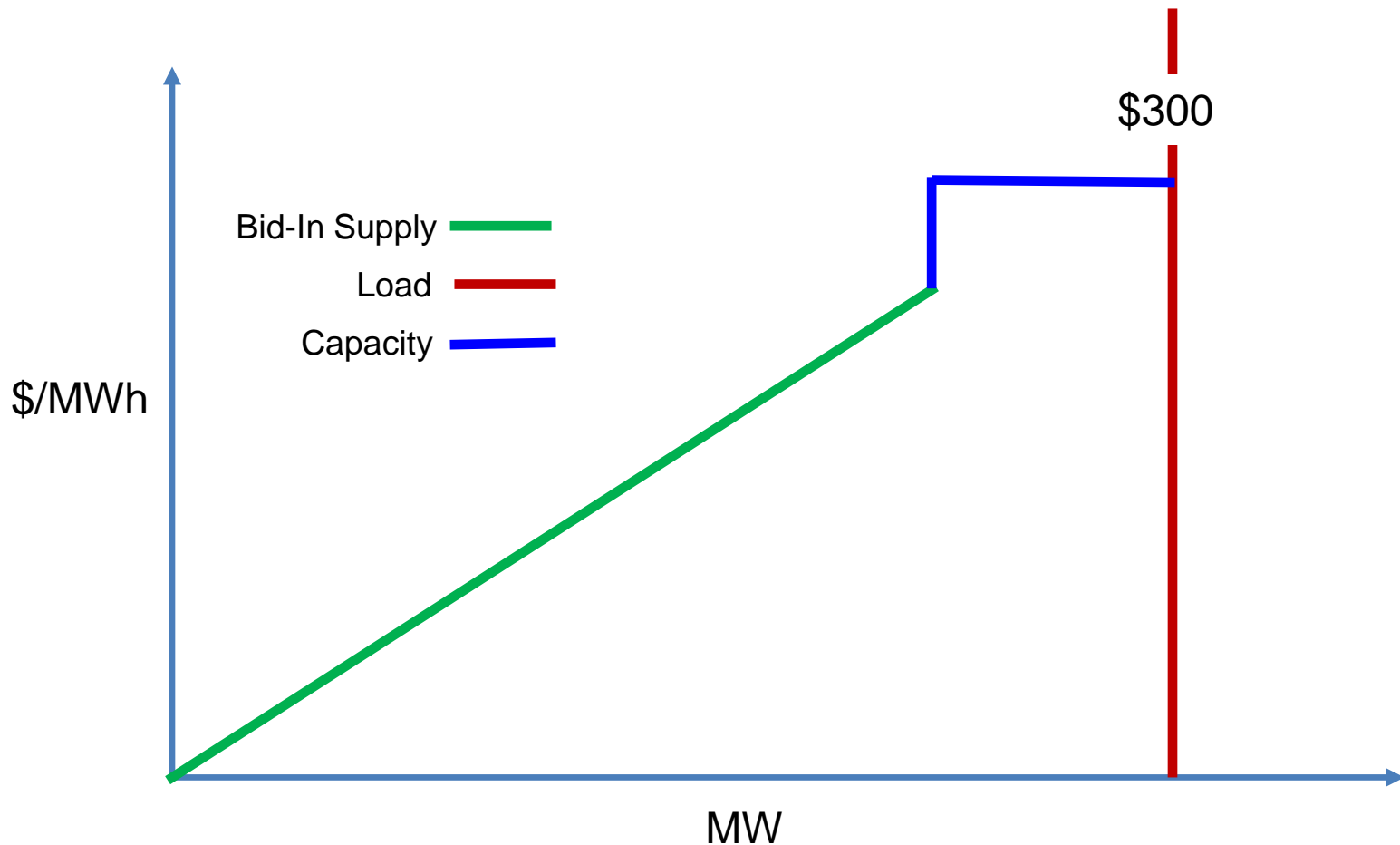
If available capacity is less than infeasibility, the price will be set by the power balance relaxation parameter



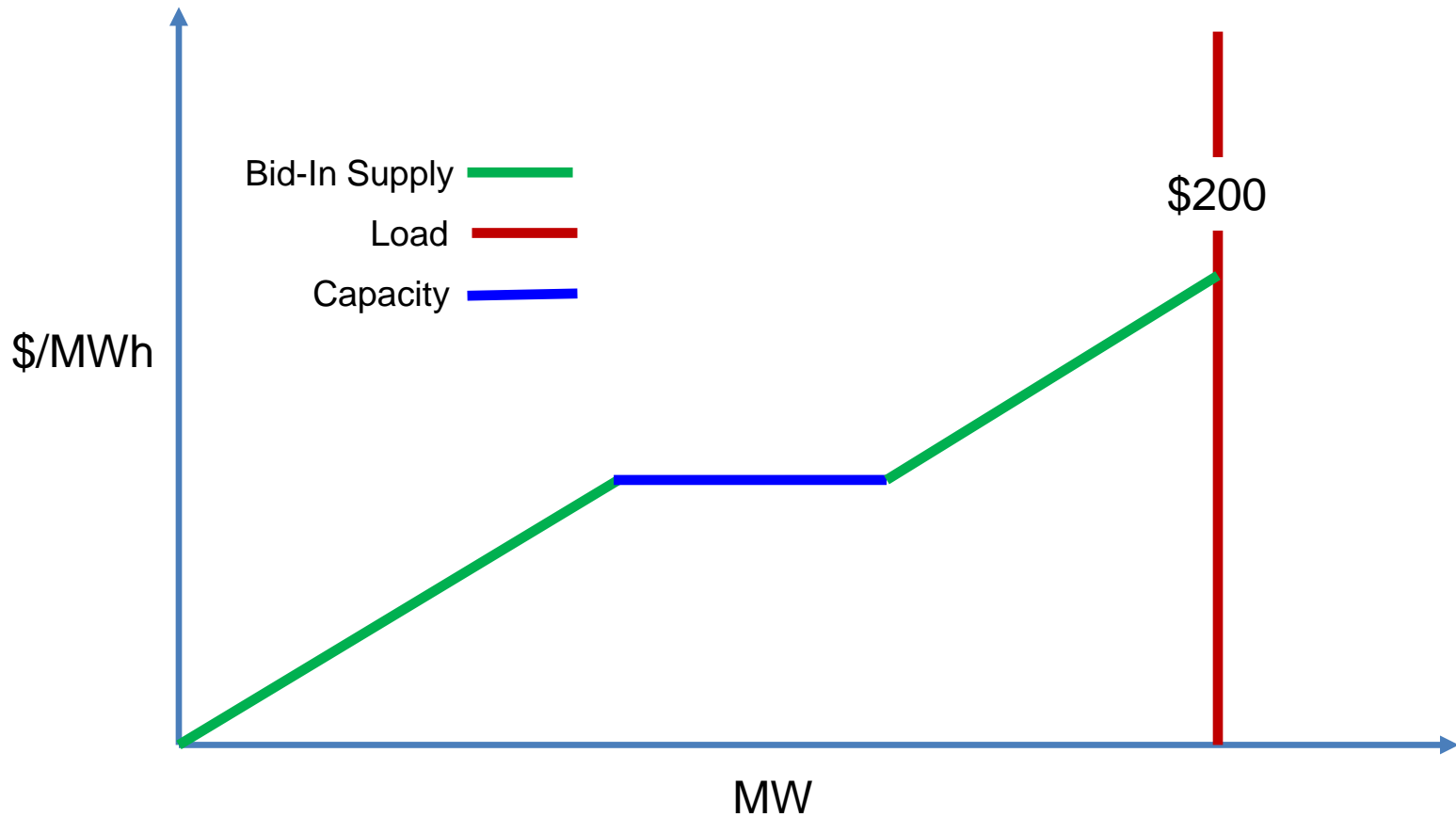
# Current design prices infeasibility at the power balance relaxation parameter of \$1000 / MWh



# Pricing Example 1 - Release available capacity equal to the infeasibility which is priced at \$300



# Pricing Example 2 - Release available capacity equal to the infeasibility which is priced at \$100

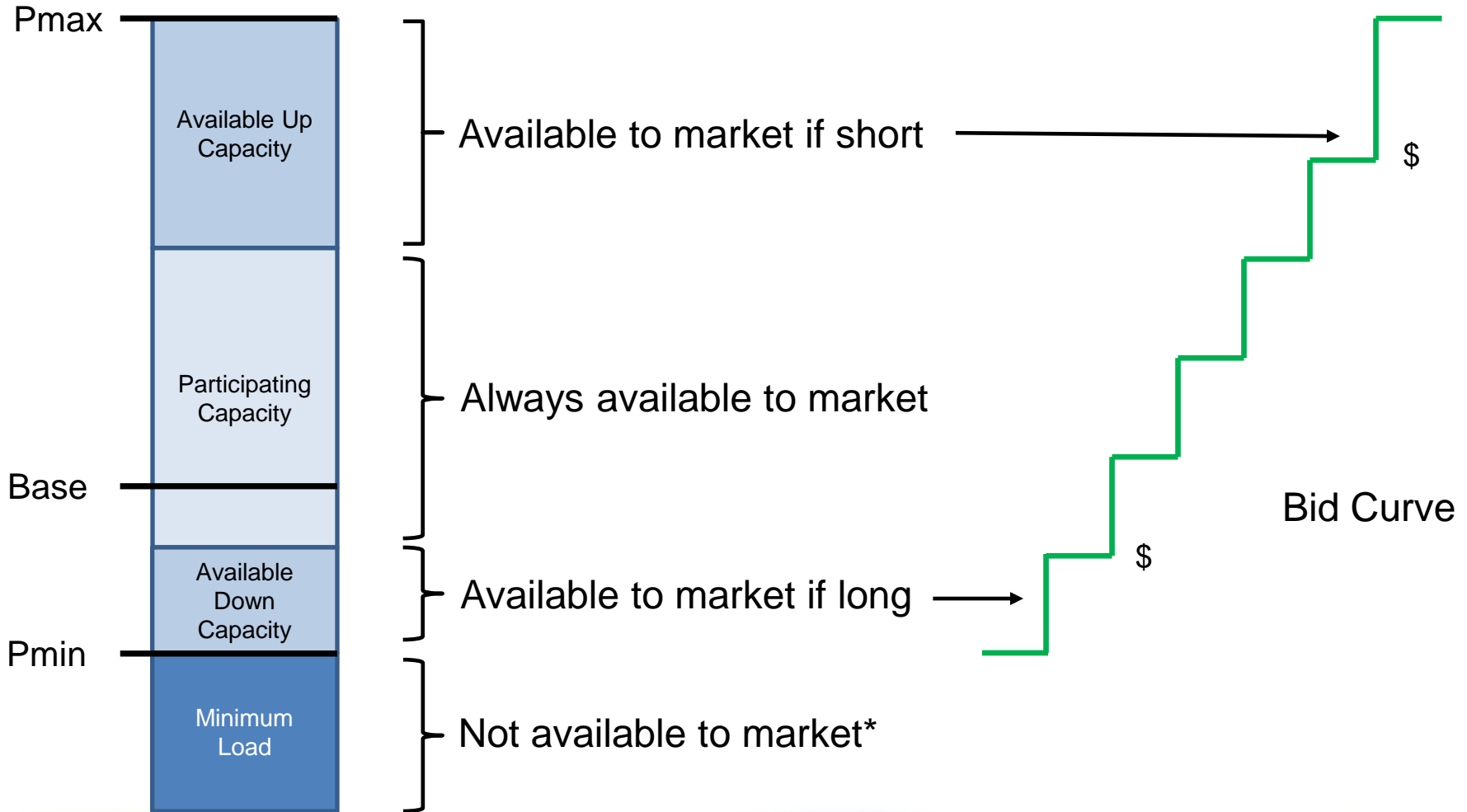




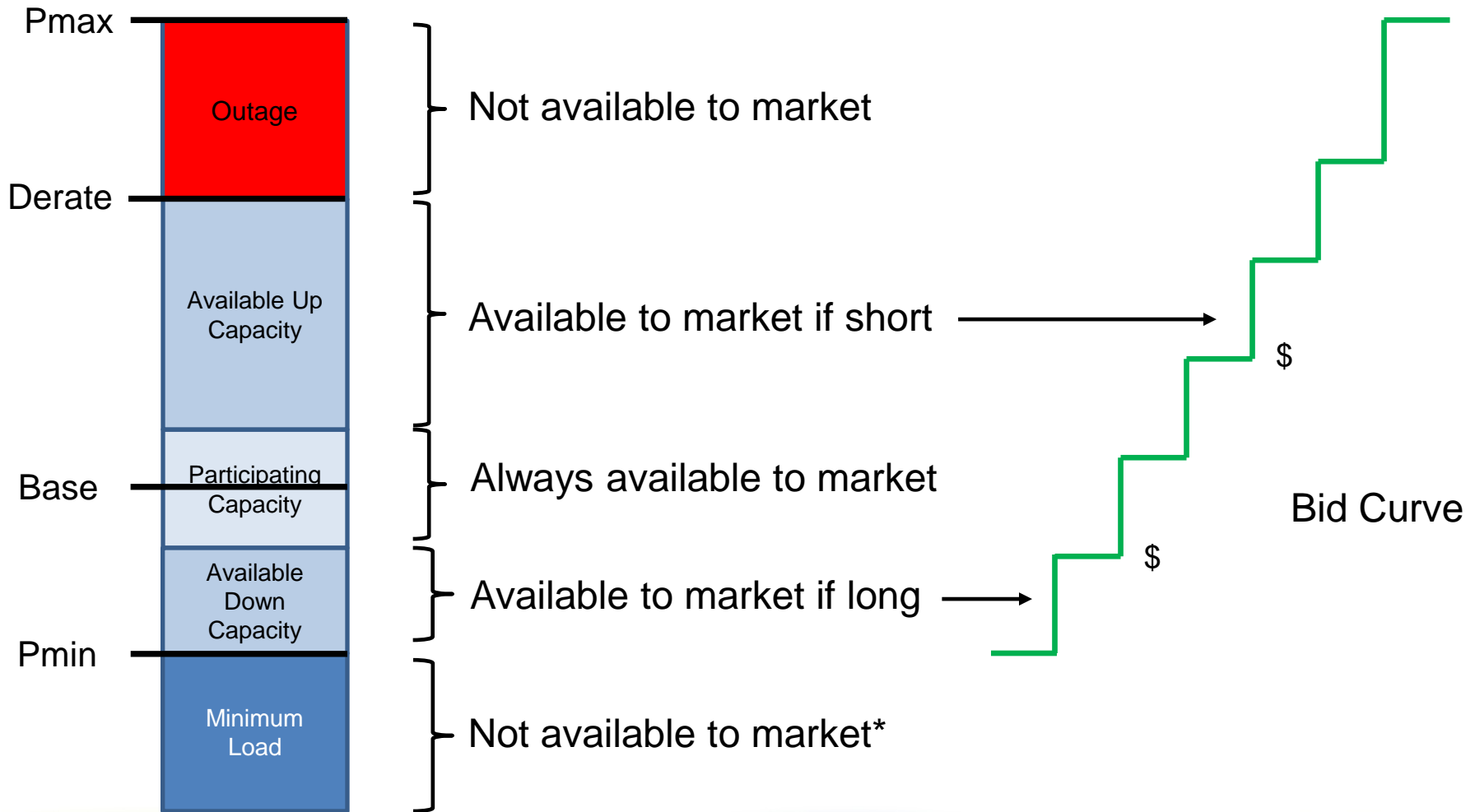
# Amount of available capacity is communicated to ISO through hourly resource plan

- For each resource specify,
  - Available capacity to meet shortfalls: Regulation up field
  - Available capacity to meet over-generation: Regulation down field
- Initial resource plans are due at T-75
- Resource plans are finalized by EIM entity at T-40
- An outage in real-time reduces the participating energy, before the available capacity to be used if infeasible

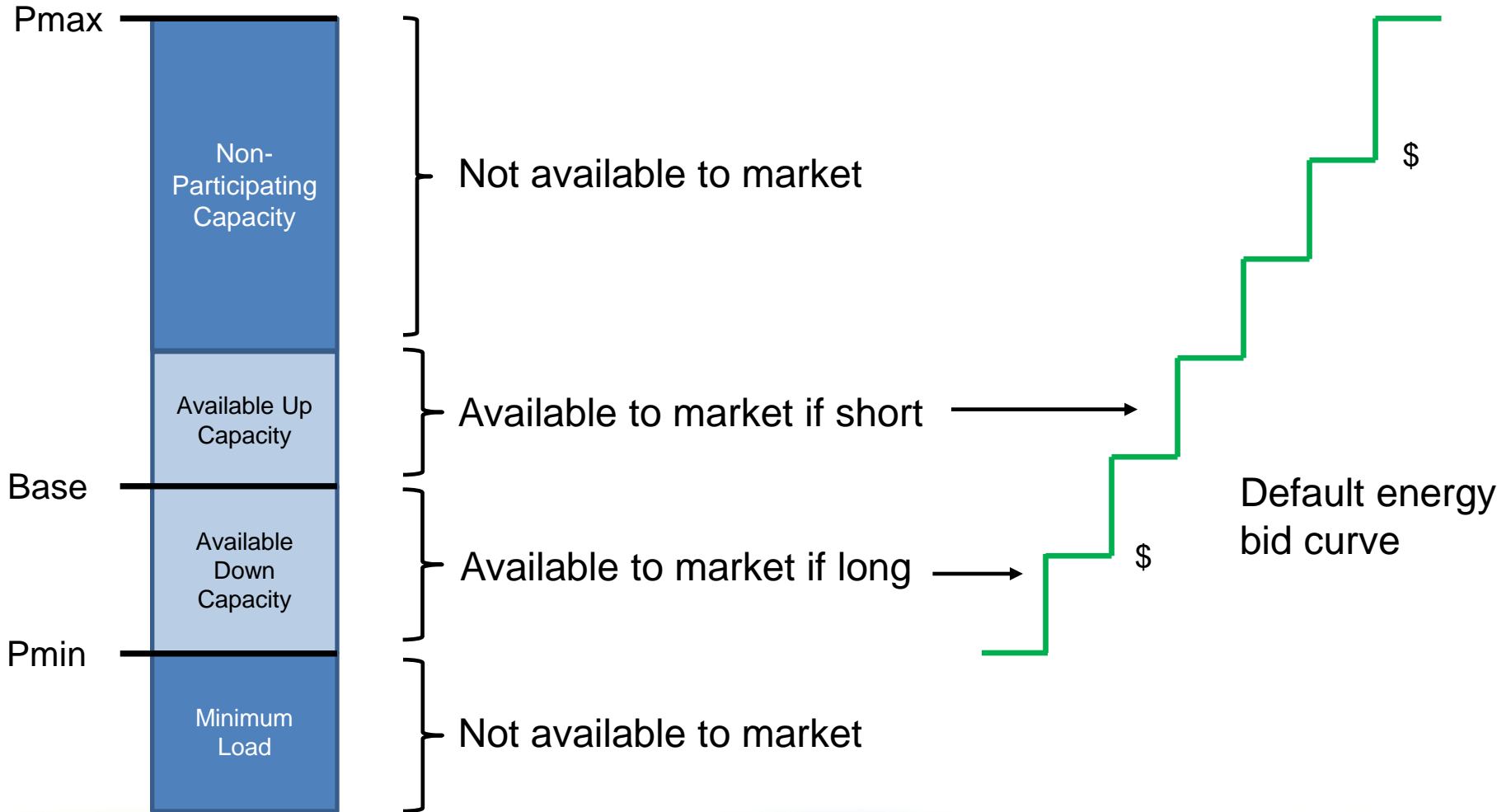
# Available capacity is priced based upon resource's bid curve



# If an outage is reported, this reduces the participating capacity, but does not change available capacity



# A non-participating resource available capacity uses the default energy bid



# Bid price of available capacity

- Participating resources
  - Submit economic bids at T-75
  - Bid range must include participating capacity and available capacity
  - Bids are subject to mitigation
- Non-participating resources
  - Use an energy bid curve based on a form of default energy bid created by the EIM entity and the CAISO

## Market formulation for shortfalls, in scheduling run

- Include available capacity bids with an adder above bid cap, but below power balance and transmission constraint relaxation parameter
  - Respects the economic merit order of available capacity and allows resource specific awards
- Add a constraint that available capacity used cannot exceed the positive difference between BAA demand and supply
  - Prevents use of available capacity to support EIM transfers
- Add a surplus variable to the EIM transfer equation at a high penalty price
  - If insufficient available capacity, ensures infeasibility maintained

## Market formulation in the pricing run

- Use available capacity bids for resources with awards
- Limit available capacity dispatch to the scheduling run solution
- Reduce the load forecast by small tolerance to allow price discovery
  - No need to mathematically freeze EIM transfers, as this is accomplished via second bullet above
  - By not freezing, price can be set by marginal resources outside the BAA
- If available capacity was not sufficient, the \$1000 relaxation parameter will apply

# Energy settlement when available capacity is used

- Participating Resource (EIM Participating Resource SC)
  - Same as an energy dispatch in the participating range
- Non-participating resource (EIM Entity SC)
  - Before October 1, 2015
    - If in FMM, settled as IIE at 15-minute price
    - If in RTD, settled as UIE at 5-minute price
  - After October 1, 2015
    - If in FMM, settled as IIE at 15-minute price
    - If in RTD, settled as IIE at 5-minute price