Capacity Performance – Scenarios

Operating Committee - Special

January 20, 2016

Example #1 – Partial Hour Assessment

Emergency Action Issued at 1900

Performance Assessment Hour is 1900

Resource = Generator Only; DR must have at least a 30 min event in one clock hour for PAH assessment

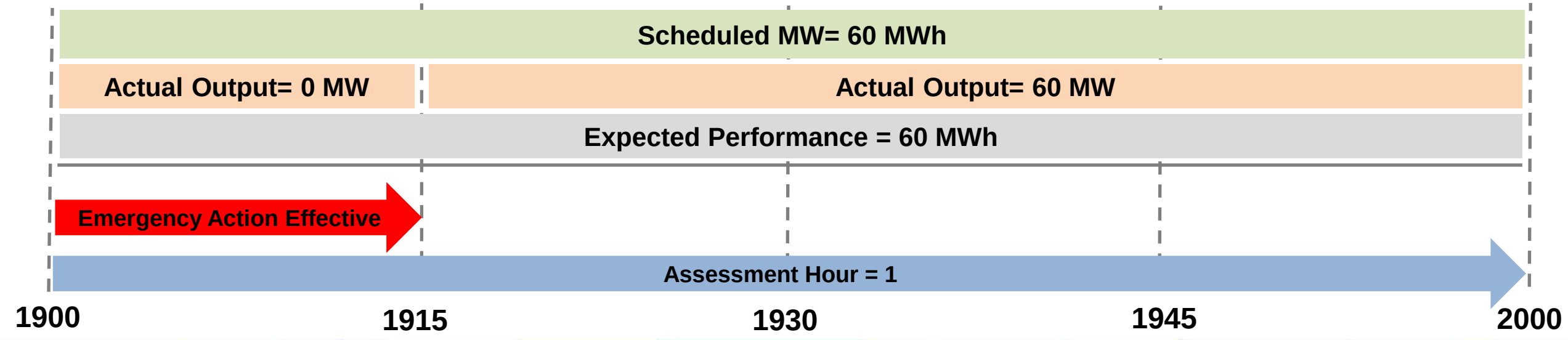
Procedure Effective 1900 - 1915

CP Commitment MW = 60 MW

Balancing Ratio = 1

Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW for HE 20 = 60 MWh
Actual Output for HE 20 = 45 MWh
Expected Performance for HE 20 = 60 MWh
Shortfall for HE 20 = 15 MWh (60 Expected – 45 Actual)



Example #2 – Partial Hour Assessment

Emergency Action Issued at 1900

Performance Assessment Hour is 1900

Resource = Generator or DR

Procedure Effective 1900-1930

CP Commitment MW = 60 MW

Balancing Ratio = 0.75

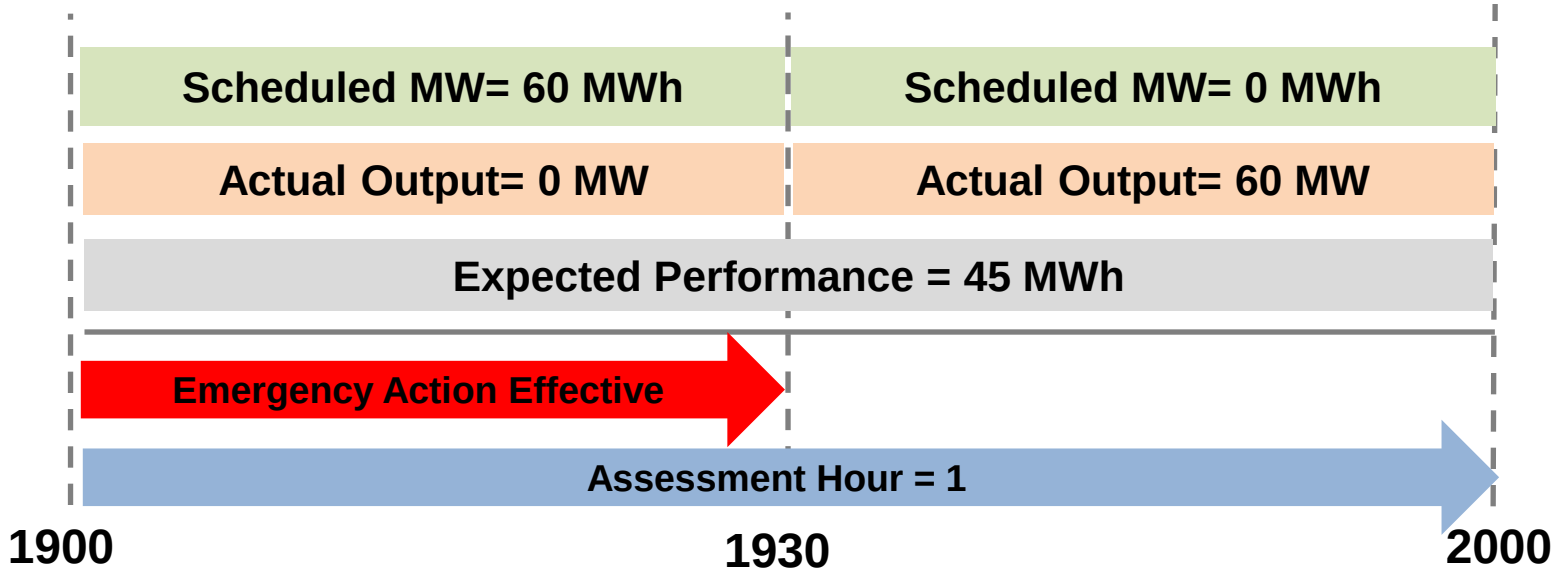
Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW for HE 20 = 30 MWh

Actual Output for HE 20 = 30 MWh

Expected Performance for HE 20 = 45 MWh

Shortfall for HE 20 = 0 MWh (45 Expected – 30 Actual – 15 excused*)



* See Slide 9

Example 31 – Partial Hour Assessment

Emergency Action Issued at 1905

Performance Assessment Hour is 1900

Resource = Generator Only; DR must have at least a 30 min event in one clock hour for PAH assessment

Procedure Effective 1905 - 1920

CP Commitment MW = 60 MW

Balancing Ratio = 1

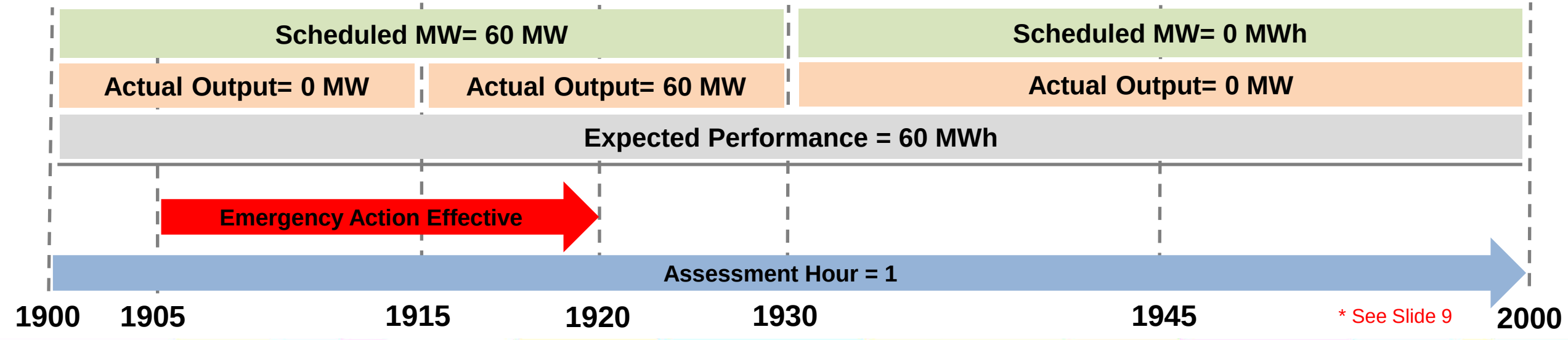
Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW for HE 20 = 30 MWh

Actual Output for HE 20 = 15 MWh

Expected Performance for HE 20 = 60 MWh

Shortfall for HE 20 = 15 MWh (60 Expected – 15 Actual – 30 excused*)



Example #4 – Partial Hour Assessment

Emergency Action Issued at 1945

Performance Assessment Hours are 1900 and 2000

Resource = Generator Only; DR must have at least a 30 min event in one clock hour for PAH assessment

Procedure Effective 1945 - 2015

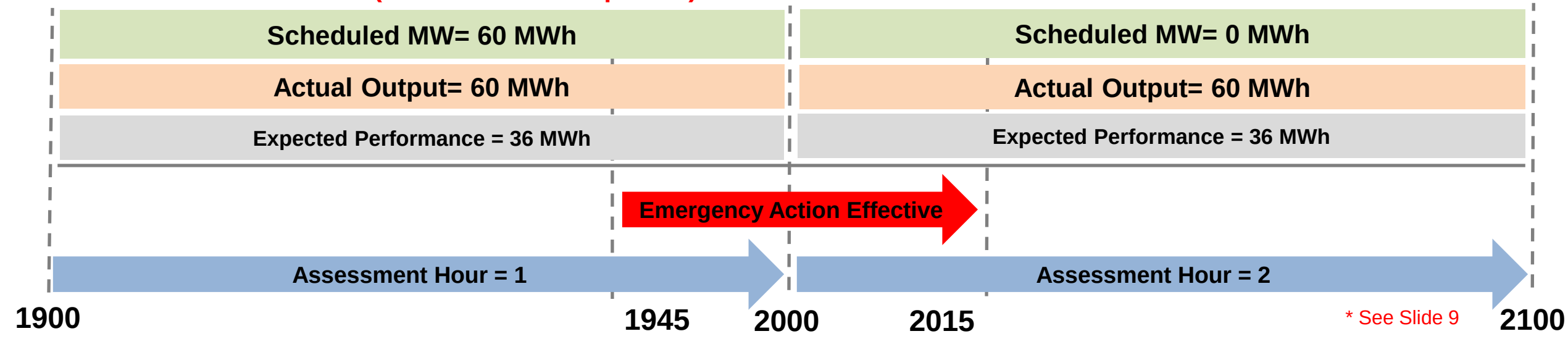
CP Commitment MW = 60 MW

Balancing Ratio = 0.60

Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW for HE 20 = 60 MWh
Actual Output for HE 20 = 60 MWh
Expected Performance for HE 20 = 36 MWh
Shortfall for HE 20 = 0 MWh (36 Expected – 60 Actual)
Bonus for HE 20 = 24 MWh (60 Actual – 36 Expected)

Scheduled MW for HE 21 = 0 MWh
Actual Output for HE 21 = 60 MWh
Expected Performance for HE 21 = 36 MWh
Shortfall for HE 21 = 0 MWh (36 Expected – 60 Actual)
Bonus for HE 21 = 0 MWh (60 Actual – 36 Expected)*



* See Slide 9

Example #5 – Partial Hour Assessment

Emergency Action Issued at 1930

Performance Assessment Hours are 1900 and 2000

Resource = Generator or DR

Procedure Effective 1930 - 2030

CP Commitment MW = 60 MW

Balancing Ratio = 0.80

Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW for HE 20 = 60 MWh

Actual Output for HE 20 = 60 MWh

Expected Performance for HE 20 = 48 MWh

Shortfall for HE 20 = 0 MWh (48 Expected – 60 Actual)

Bonus for HE 20 = 12 MWh (60 Actual – 48 Expected)

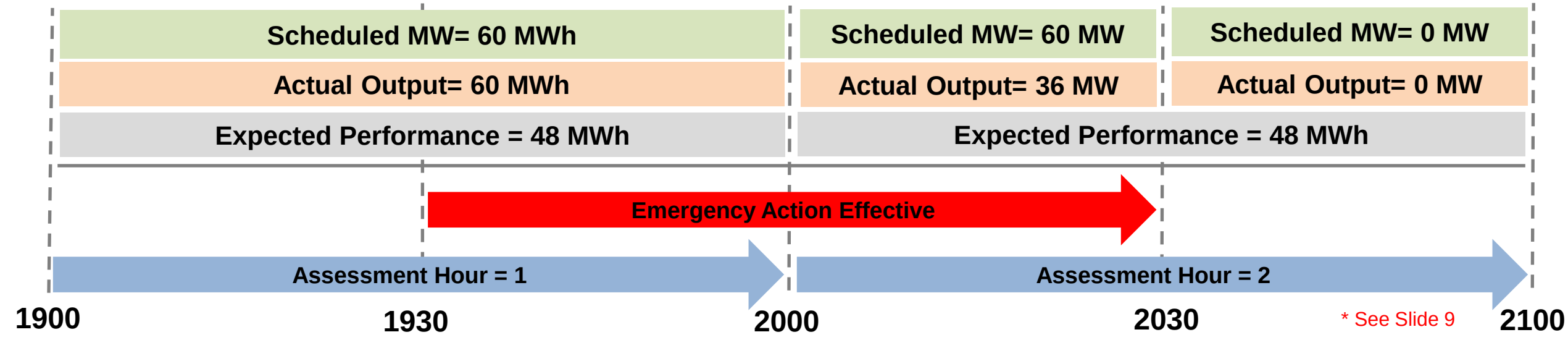
Scheduled MW for HE 21 = 30 MWh

Actual Output for HE 21 = 18 MWh

Expected Performance for HE 21 = 48 MWh

Shortfall for HE 21 = 12 MWh (48 Expected – 18 Actual – 18 Excused*)

Bonus for HE 21 = 0 MWh



* See Slide 9

Example #6 – Proposed Ramp Rate Hour Assessment

Emergency Action Issued at 1900

Performance Assessment Hour is 1900

Resource = Generator
Ramp Rate = 0.5 MW/min

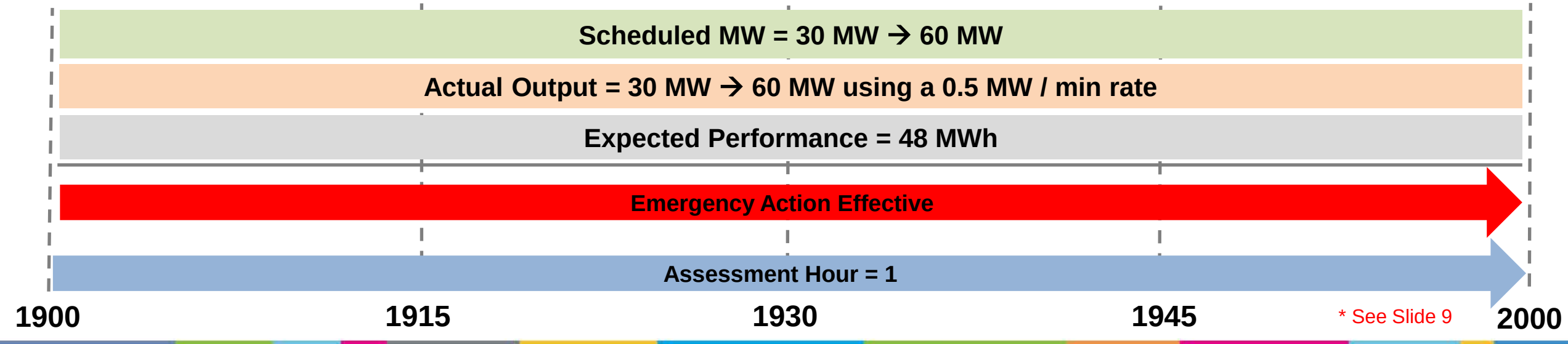
Procedure Effective 1900 - 2000

CP Commitment MW = 60 MW

Balancing Ratio = 0.80

Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW at 1900 = start at 30 MW and uniformly ramp to 60 MW (45 MWh integrated)
Actual Output for HE 20 = 45 MWh (unit performs to ramp rate)
Expected Performance for HE 20 = 48 MWh
Shortfall for HE 20 = 0 MWh (48 Expected – 45 Actual – 3 excused*)



Example #7 - Proposed Ramp Rate Hour Assessment

Emergency Action Issued at 1900

Performance Assessment Hour is 1900

Resource = Generator
Ramp Rate = 0.75 MW/min

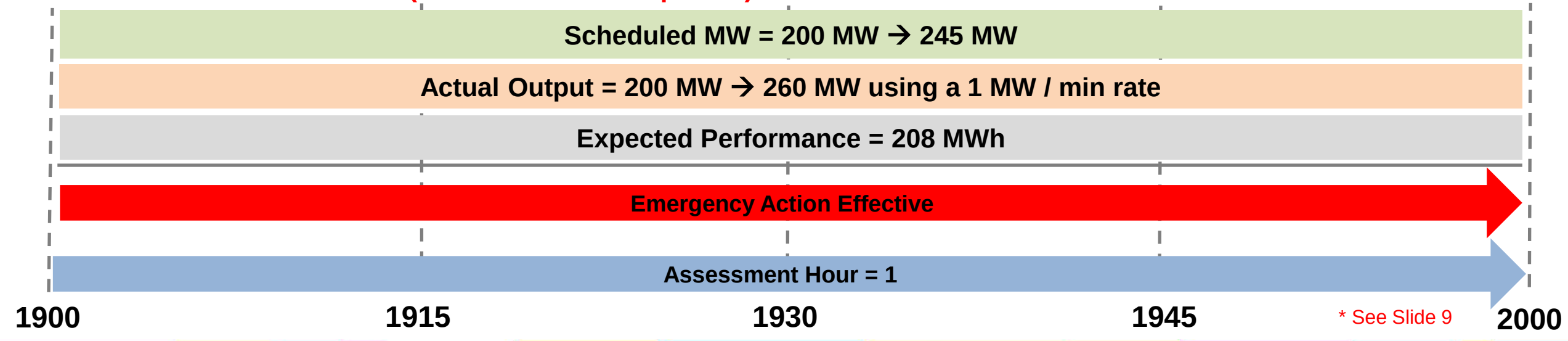
Procedure Effective 1900 - 2000

CP Commitment MW = 260 MW

Balancing Ratio = 0.80

Expected Performance = CP Commitment MW * Balancing Ratio

Scheduled MW at 1900 = start at 200 MW and ramp to 245 MW (223 MWh integrated)
Actual Output for HE 20 = 230 MWh (unit outperforms ramp rate)
Expected Performance for HE 20 = 208 MWh
Shortfall for HE 20 = 0 MWh (208 Expected – 230 Actual)
Bonus for HE 21 = 15 MWh (230 Actual – 208 Expected) limited to the 223 Scheduled MWh*



Calculation Explanation for Examples

Excused MWh = Lesser of (Expected – Scheduled) or (Expected – Actual)
Bonus MWh = Lesser of (Scheduled – Actual) or (Actual - Expected)

Example#1 – 0 MW excused: (60 Expected – 60 Scheduled), (60 Expected – 45 Actual)
Example#2 –15 MW excused: (45 Expected – 30 Scheduled), (45 Expected – 30 Actual)
Example#3 – 30 MW excused: (60 Expected – 30 Scheduled), (60 Expected – 15 Actual)
Example#4 – no Bonus: PJM did not schedule resource
Example#5 –18 MW excused: (48 Expected – 30 Scheduled), (48 Expected – 18 Actual)
Example#6 – 3 MW excused: (48 Expected – 45 Scheduled), (48 Expected – 45 Actual)
Example#7 – 15 MW Bonus: Capped at PJM schedule (223 Scheduled – 208 Expected)