THREE COMPLIANCE OPTIONS

1. Average state CO2 rate based for affected units - provides credit for renewables and EE programs. States will have difficulties in developing an enforceable program. However, this approach provides direct tradable credit for renewable energy and energy efficiency measures that the others do not.

2. State mass based CO2 limitation with all affected units - EPA concern about leakage from unregulated units and requires states demonstrate compliance with rate based limitations. EPA suggests that only #3 provides presumptive approval for handing leakage

3. State mass based limits for all in state power sources (new and existing)

MAJOR CHANGES IN STATE LIMIT CALCULATIONS

- Shifted from State Specific Building Block Applications to a Regional Interconnection Approach. (Bad for North Dakota, contrary to what we has asked them to do)
  - Major impact for states that had little to no underutilized natural gas combined cycle capacity (e.g. ND).
  - Rate Limits calculated separately for steam units (coal, oil/gas) and existing NGCC units and then applied to each state based upon its 2012 mix. Therefore ND rate limits based only on the calculated steam unit rate calculations
  - By aggregating to Eastern Interconnection basis, the higher lignite CO2 emission rates are lost in the interconnection calculation that are more heavily weighted towards bituminous coal units and a large mix of supercritical coal capacity. As a result, ND limit does not reflect the state actual CO2 emission rates, making its reduction burden greater.
- Eliminated nuclear power from Building Block #3 and contribution towards rate calculation. (Little impact on ND, generally good for nuclear power)
- Shifted natural gas redistribution building block #2 calculation from 70% CF of its unit nameplate capacity to 75% CF of its net summer capacity. (No impact on ND)
- Reduced coal unit process efficiency improvement (Building Block #1) from 6 percent (6/14 proposal) to 4.3% in the final rule. (The way this change was calculated hurts North Dakota)
- Final rule requires state plans to address "leakage" from new sources. EPA aims to eliminate new source displacement of existing fossil fired units as a compliance option (proposed limit allowed, and it was an effective, low cost CO@ reduction strategy).

TOTAL POWER GENERATION OVERVIEW - LOWER INITIAL BASELINE, SHRINKING DEMAND FROM CPP START THROUGH 2030

	2016	2018	2020	2025	2030	2040	2050
Base Case	4,057	4,136	4,190	4,328	4,467	4,747	5,050
Mass Based	4,054	4,130	4,159	4,118	4,110	4,321	4,601
Rate Based	4,055	4,130	4,160	4,128	4,122	4,324	4,601
Proposed Base	4,060	4,143	4,227	4,404	4,557	4,910	5,288
Proposed Rate	4,063	4,092	4,100	4,062	4,051	4,295	4,631
EVA No Carbon	4,012	4,106	4,150	4,241	4,354	-	-
EVA Carbon	4,013	4,105	4,153	4,214	4,310	-	-

Units are in thousand GWh

EPA assumes that CPP will shrink power demand in 2020-2030 period. EPA CPP demand less than Energy Ventures Analysis carbon outlook.

RENEWABLES OVERVIEW- LIMIT RATE CALCULATION ASSUMES GREATER RENEWABLE GENERATION GROWTH AND HIGHER THAN EPA IPM MODEL PROJECTIONS.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Final CPP			242	271	333	395	457	519	582	644	706
Proposed CPP	280	303	326	351	377	406	437	468	497	522	522
EVA No Carbon	342	349	356	364	371	380	389	397	404	414	421
EVA Carbon	345	357	367	379	388	402	413	425	435	450	462
EPA RIA Base Case	406					436					473
EPA RIA Proposed Base Case	323					346					356
EPA RIA Rate Based	410					429					504
EPA RIA Proposed Rate Based	323					346					356
AEO 2015	387	398	405	410	416	421	428	435	443	451	461

Units are in TWh

EPA assumes higher renewable generation in its limit calculation than it assumes will be actually built under the CPP. EPA most recent modeling shows a significant increase in basecase renewable generation versus prior 2014 results.

This is strange, since it sets up a contradiction regarding renewable generation between two parts of the final rule.

NATURAL GAS PRICES EXPECTED TO DECLINE DUE TO CPP IMPLEMENTATION AND NOT INCREASE AS PROJECTED BY OTHER STUDIES (2011$/MMBTU)

	2016	2018	2020	2025	2030	2040	2050
Base Case	$3.99	$4.46	$5.20	$5.12	$6.01	$5.67	$6.44
Mass Based	$4.03	$4.50	$5.40	$4.97	$5.92	$5.55	$6.33
Rate Based	$4.04	$4.51	$5.48	$4.73	$6.21	$5.49	$6.27
Proposed Base	$4.34	$4.95	$4.98	$5.69	$6.00	$6.56	$8.65
Proposed Rate	$4.55	$4.88	$5.61	$5.57	$6.07	$6.29	$8.37

- The EPA did not consider the deliverability of natural gas, or the associated infrastructure is sufficient to deal with changes in natural gas demand.
- However, distribution of underutilized gas units are not evenly distributed throughout region.

STATE POLICY ISSUES THAT MUST BE ADDRESSED IN STATE SIP PLANS

Several state decisions will have large impacts on utility compliance costs

1. Allowance allocation – free allowances to affected sources versus open allowance auction
2. Renewable incentives
3. Energy Efficiency incentives
4. Trading limitations
5. Authorizing legislation to develop an enforceable limitation
6. Leakage from New NGCC—how will we ask new natural gas fired power plants to "account" for their CO2?