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BY EMAIL AND WEB SUBMISSION

November 21, 2014

To: Docket ID No. EPA–HQ–OAR–2013–0602

Re: Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule; 79 Fed. Reg. 34830 (June 18, 2014)

To Whom It May Concern:

Attached are the comments of the Arizona Department of Environmental Quality on building block 2 of EPA's proposed guidelines for CO2 emissions from fossil fuel-fired electric generating units.

Sincerely,

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Director

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Arizona Department of Environmental Quality Comments on Building Block 2

November 20, 2014

The following are the comments of the Arizona Department of Environmental Quality (ADEQ) on portions of EPA's proposed Clean Power Plan (CPP).[1] Specifically, these comments focus on building block 2 (BB2) of EPA's methodology for establishing the rate-based goals that state plans submitted under the proposed rule would be required to achieve.[2] ADEQ's comments address both the original proposal with regard to BB2 and the BB2 issues on which EPA has requested comment in the recent Notice of Data Availability (NODA).[3] ADEQ plans to submit additional comments addressing other aspects of the CPP proposal by the close of the public comment period on December 1, 2014.

As documented below, ADEQ has identified two significant problems with BB2.

First, the assumption that states can fully implement BB2 by 2020 and the incorporation of that assumption into the interim goal are inconsistent with the objective of allowing states flexibility in choosing how to comply with the CPP and with the requirements of section 111(d).

Second, ADEQ is concerned that application without modification of BB2 to Arizona, and states with a similar generation mix, may result in an overly stringent rate that is inconsistent with EPA's goal of maintaining "an affordable, reliable and diverse energy mix."[4]

I. Assumed Implementation of Building Block 2 by 2020

A. Effect on Flexibility[5]

If there is one feature of the CPP that EPA emphasizes more than any other, it is flexibility. EPA repeatedly states throughout the Notice of Proposed Rulemaking that the proposal does not require states to implement the particular configuration of building blocks assumed in setting the rate-based goals. Rather, states are free to shift emphasis from one set of building blocks to another, as long as they meet the rate-based goal.[6] Throughout the NPRM and technical support documents (TSDs) and in discussions with

[1] Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule; 79 Fed. Reg. 34830 (June 18, 2014); Docket ID No. EPA–HQ–OAR–2013–0602

[2] By offering these comments on technical issues with BB2, ADEQ is not conceding EPA's authority to adopt section 111(d) guidelines based on redispatch or waiving any legal arguments it may raise in subsequent comments.

[3] 79 Fed. Reg. 64543 (October 30, 2014).

[4] 79 Fed. Reg. at 34832.

[5] This section expands on the comments submitted by ADEQ on August 22, 2014.

[6] See, e.g., 79 Fed. Reg. at 34833-34, 34836, 34853, 34858, 34897

stakeholders, if any potential impediment to implementation of the proposal is raised, EPA's answer is, almost inevitably, flexibility.[7]

In particular, EPA maintains that the CPP gives states flexibility to place greater emphasis on measures with longer implementation periods than EPA did in setting the rate-based goals:

> [B]y allowing states to demonstrate emission performance by affected EGUs on an average basis over a multi-year interim plan period of as long as ten years, the EPA's proposed approach increases states' flexibility to choose among alternative potential plan measures. For example, *by taking advantage of the multi-year flexibility, a state could choose to rely more heavily in its plan on measures whose effectiveness tends to grow over time, such as demand-side energy efficiency programs.* This flexibility could also help states address concerns about stranded assets, for example, by enabling states to defer imposition of requirements on EGUs that may be scheduled to retire after 2020 but before 2029.[8]

In fact, however, incorporation of the assumed 2020 implementation date for BB2 into the interim goal calculation will have the opposite effect and will interfere with a state's ability to shift from BB2 to measures, such as BB3 and BB4, "whose effectiveness tends to grow over time." Because the interim goal reflects an average of annual values from 2020 to 2029, states cannot shift reductions in generation on a MWh-for-MWh basis from BB2 to BB3 or BB4 without violating the interim goal.

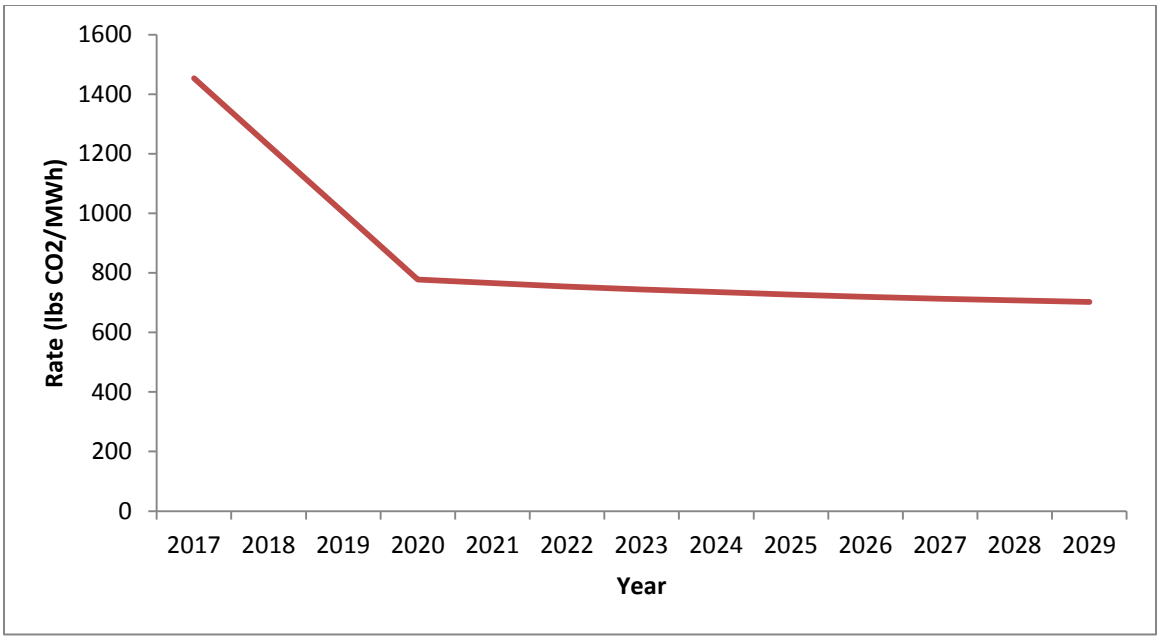
1. Impact of BB2 and the Interim Goal on Arizona

Since application of BB2 to Arizona results in the assumed retirement of the state's entire coal fleet by 2020 and accounts for 81 % of the reduction in the state's adjusted baseline rate,[9] the effect on this state is particularly acute, as shown in the following graph of Arizona's rate reduction curve:

[7] For example, EPA maintains that the flexibility to shift from BB1 to other building blocks will allow states to avoid the imposition of costly equipment upgrades on units with a short remaining useful life and therefore obviates the need to include the § 111(d) exemption, 40 C.F.R. § 60.24(f), that is ordinarily available for such situations. 79 Fed. Reg. at 34925-26. EPA also maintains that states can use the proposal's flexibility to overcome the potential applicability of new source review to CO2 reduction measures. 79 Fed. Reg. at 34928.

[8] 79 Fed. Reg. at 34897 (emphasis added).

[9] As shown in Appendix 1, the adjusted rate after redispatch is 843 lbs CO_2/MWh. (1453-843)/(1453-702) = 81 %.



Appendix 1 to these comments uses EPA's calculation methodology to illustrate the impact. Scenarios 2 through 5 incorporate increasingly aggressive assumptions with regard to BB3 and BB4. The resulting renewable energy (RE) generation and energy efficiency (EE) demand reductions are used to reduce the amount of redispatch from coal to NGCC and thus preserve a portion of the state's coal generation.

The results are summarized in the following table:[10]

Scenario	Coal Gen. After Redispatch (MWh)	O/G steam Gen. After Redispatch (MWh)	NGCC Gen. After Redispatch (MWh)	Interim Goal or Rate	Final Goal or Rate
1. EPA Goal Calculation	0	0	52,152,127	**735**	**702**
2. 15 % RE and 1.61 % Incremental EE Savings	6,532,308	277,514	45,342,304	**774**	**702**
3. 21 % RE and 1.61 % Incremental EE Savings	9,707,767	412,418	42,031,941	**803**	**702**
4. 33 % RE and 2.00 % Incremental EE Savings	17,289,394	734,511	34,128,222	**858**	**702**
5. 33 % RE and 2.00 % Incremental EE Savings	9,476,915	402,611	42,272,601	**735**	**601**

[10] As indicated in ADEQ's August 22, 2014 comments, the scenarios presented in Appendix 1 are offered solely to illustrate the problems with the proposed interim goal and do not reflect any determination by ADEQ that they are technically or economically feasible.

As the table shows, the more Arizona relies on BB3 and BB4 to achieve compliance with the final goal of 702 lbs CO_2/MWh, the farther it gets from compliance with the interim goal (scenarios 2-4). Conversely, if Arizona designs its program to comply with the interim goal, it ends up with a final rate that is far lower than necessary to comply with the final standard and ends up preserving a much smaller portion of its existing coal-fired generation resources (scenario 5).

Based on a review of EPA's data, many other states face this same issue, including Texas, Florida, Arkansas, North Carolina and Oklahoma.

2. Impact of Averaging

In discussions with ADEQ staff, EPA has suggested that despite the difference in implementation dates for the building blocks, the 10-year averaging period affords the flexibility promised by the proposal. The analysis in Appendix 1, however, incorporates the 10-year averaging period and still demonstrates that the 2020 implementation date for BB2 interferes with flexibility.

ADEQ acknowledges that it would be theoretically possible to redistribute reductions over the 10-year interim goal compliance period in order to achieve the interim goal without overshooting the final goal by as much as Scenario 5 indicates. The relief afforded by manipulation of the 10-year average, however, would be minimal.

For example, ADEQ is aware of an analysis by Southwest Energy Efficiency Project (SWEEP) and Arizona State University which includes a compliance scenario that would purportedly preserve 35 % of the state's coal generation in 2020, 25 % in 2030 while achieving the interim goal of 735 lbs CO_2/MWh and a final rate of 692 lbs CO_2/MWh (thus overshooting the final goal by 10 lbs/MWh).

There are, however, a number of problems with this scenario. Specifically, it assumes:

- An implementation schedule for BB3 and BB4 that is far more aggressive than contemplated in EPA's BSER determination and that in ADEQ's view may not be achievable.
- Compliance with a rate that is lower than the final goal by 2025.
- Compliance with rates in 2026 through 2028 that are lower than the final 2029 rate.
- Retirement of 65 % of the state's coal fleet by 2020, including Unit 3 at Springerville, which has been in operation for less than 10 years, and Coronado Unit 1, which has recently undergone millions of dollars of pollution control upgrades.[11]

[11] The scenario also characterizes the retirement of Cholla 1 and 3 as being "per APS proposal." This is not entirely accurate. APS has not proposed full retirement of these units but rather re-firing with natural gas and an operational limit of 20 % of capacity.

If anything, the need to incorporate such aggressive and unrealistic assumptions in order to bring the interim and final goals closer together only serves to demonstrate the inflexibility inherent in the proposal.

3. Compliance Calculation Alternative

EPA also has suggested in discussions with ADEQ staff that employing a different calculation method for projecting or demonstrating compliance could afford some relief from the constraints imposed by the interim goal. EPA's goal calculation equation incorporates the impact of RE and EE by adding RE generation and EE savings to the denominator. In the context of projecting or demonstrating compliance, however, a state might take an approach that accounts for the specific fossil fuel emissions displaced by RE and EE. As EPA acknowledged in the NODA, adopting this approach will generally yield a lower rate than EPA's goal setting methodology.

Scenario 6 from Appendix 1 employs this alternative calculation methodology using the same RE and EE assumptions as Scenario 2 while again targeting compliance with the final rate. The following is a comparison of the two scenarios:

Scenario	Coal Gen. After Redispatch (MWh)	O/G steam Gen. After Redispatch (MWh)	NGCC Gen. After Redispatch (MWh)	Interim Goal or Rate	Final Goal or Rate
2. 15 % RE and 1.61 % Incremental EE Savings	6,532,308	277,514	45,342,304	774	702
6. Scenario 2; RE & EE Reduce NGCC Emissions	10,396,447	441,676	41,314,004	820	702

As indicated, the use of the alternative methodology is helpful in that it allows preservation of additional coal generation while still achieving the final goal. At the same time, however, this change actually makes it more difficult to achieve the interim goal without overshooting the final goal. It therefore does not resolve the inconsistency between the BB2 implementation date and the intended flexibility of the proposal.

4. Credit for Early Reductions

In the NODA, EPA suggests that giving credit for "early reductions could be used as a way to ease the 2020-2029 glide path." As the NODA recognizes, the original proposal included two approaches to giving credit for early action.[12] Under the first, EPA would give credit for emissions reductions that occur after 2020 as a result of pre-2020 actions. Under the second, EPA would give credit for actual pre-2020 emissions reductions.

[12] 79 Fed. Reg. at 64545. Both the NODA and the NPRM initially state that EPA is soliciting comment on a "range of approaches." The subsequent discussion, however, makes it clear that the alternatives presented consist of two different conceptual approaches and a range of start dates for each.

As discussed below, neither approach presents an adequate solution to the interim goal problem.

a. First Approach: Credit for Emissions Reductions Occurring as a Result of Pre-2020 Actions

Under the first, and proposed, approach, EPA would give credit for emissions reductions occurring during the plan period (2020-2029) "as a result of actions taken after a specified date" but before the plan period starts. EPA proposed that the "specified date" would be June 18, 2014, the date of the CPP proposal, but stipulated that this "limitation would not apply to existing renewable energy."[13]

If this approach were adopted, cumulative EE savings for 2020 and later would be credited as long as they resulted from incremental EE savings implemented after June 2014. So would post-2020 emissions reductions resulting from existing in-state, utility scale RE. Emission reductions occurring before 2020 as a result of EE savings or RE generation, however, would not count towards compliance.

ADEQ's original analysis, summarized in section I.A.1 above, incorporated this proposed approach and nevertheless demonstrated that the interim goal interferes with flexibility. The August 22, 2014 version of Appendix 1 assumed that emissions reductions occurring in 2020 or later from (1) incremental EE savings achieved after June 2014 and (2) existing in-state, utility scale RE would be credited.

EPA also solicited comment on alternative "specified dates."[14] Although ADEQ intends to comment in favor of an earlier specified date in its BB3 and BB4 comments for other reasons, adopting an earlier date will do nothing to resolve the inconsistency between the interim and final goals.

Scenario 7 in Appendix 1 shows why. This scenario modifies Scenario 2 by assuming credit for reductions occurring as a result of incremental EE savings starting in 2012, rather than mid-2014, as proposed.

Scenario	Coal Gen. After Redispatch (MWh)	O/G steam Gen. After Redispatch (MWh)	NGCC Gen. After Redispatch (MWh)	Interim Goal or Rate	Final Goal or Rate
2. 15 % RE and 1.61 % Incremental EE Savings	6,532,308	277,514	45,342,304	774	702
7. Scenario 2; EE Credited from 2012	10,546,027	448,030	41,158,069	**809**	**702**

These results are similar to the results for the alternative calculation methodology discussed in section I.A.3 above. Once again, the suggested change increases the

[13] 79 Fed. Reg. at 34918 & n.293.
[14] 79 Fed. Reg at 34918.

amount of coal generation that could be preserved but increases the inconsistency between the interim and final goals.

b. Second Approach: Credit for Emissions Reductions Occurring Before 2020

Under the second approach, EPA "would recognize emission reductions that existing state requirements, programs and measures achieved starting from a specified date prior to the initial plan performance period, as well as emission reductions achieved during a plan performance period."[15] According to EPA the "rationale for this approach would be that higher emissions in 2020-2029 would be offset by pre-2020 emission reductions not required by the CAA section 111(d) program."[16] In contrast to the first approach, emissions reductions occurring before 2020 as a result of EE savings (and other measures) potentially could be credited.

This alternative is too amorphous for ADEQ to assess its potential impact on compliance with the interim goal with any degree of precision. It seems likely, however, that the effect would be quite limited and therefore inadequate to address the interim goal problem.

The proposal strongly suggests that if this alternative were adopted, credit would be "limited to reductions that would not have occurred in the absence of the CAA section 111(d) program." Otherwise, "the total emissions to the atmosphere would likely be greater under this approach."[17] Arizona utilities, however, were subject to and in compliance with ambitious RE and EE programs before EPA proposed the CPP. The probability is extremely low that Arizona could both adopt new programs and achieve significant emission reductions under those programs before 2020.

B. BSER and the Timing of Emissions Reductions

EPA has suggested that regardless of its impact on flexibility, the 2020 implementation date may be required as an element of the BSER determination.[18] ADEQ disagrees with this suggestion.

Section 111(a)(1) defines the "standard of performance" to be imposed under section 111(d) as:

> the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.[19]

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[15] 79 Fed. Reg. at 34918-19.
[16] 79 Fed. Reg. at 34919.
[17] 79 Fed. Reg. at 34919.
[18] See, e.g., 79 Fed. Reg. at 64564.
[19] 42 U.S.C. § 7411(a)(1).

Strict application of BB2 to Arizona by 2020 would not constitute BSER under this definition for four reasons.

First, requiring the retirement of Arizona's entire coal fleet by 2020, which would be the effect of imposing BB2 as a stand-alone requirement, would impose unreasonable costs in the form of stranded investments.

Second, EPA modeling of the nationwide cost impacts of redispatch pursuant to BB2 appears to be flawed.

Third, the assumption of a 2020 implementation date for BB2 fails to account adequately for the need to develop the infrastructure required for redispatch.

Finally, as discussed in section II.A below, full imposition of BB2 by 2020 or even 2030 could jeopardize the reliability of Arizona's grid and would be inconsistent with EPA's obligation to consider "energy requirements."

For these reasons, the 2020 implementation date also would be inconsistent with EPA's goal of maintaining an affordable and reliable energy mix.

1. Cost of Imposition by 2020 in Arizona

If adopted as a stand-alone standard of performance, the application of BB2 as proposed would require the retirement of Arizona's entire coal fleet, which makes up approximately 36 % of Arizona's generation mix, by 2020. This fleet includes 900 MW constructed within the last 10 years (Springerville 3 and 4), 820 MW that underwent approximately a half a billion dollars in air quality control improvements in 2012 (Coronado 1 and 2) and another 350 MW undergoing fuel conversion or additional air pollution control under the Regional Haze rule (Apache Station 2 and 3), all with associated costs.

The retirement of the entire fleet by 2020 thus would result in unreasonable costs in the form of enormous stranded investments. Utilities, and ultimately rate payers, would end up paying twice for the same generation: once to retire the debt on the prematurely retired assets and again to fund replacement generation.

2. Cost of Imposition by 2020 Nationwide

EPA has not demonstrated that imposition of BB2 by 2020 nationwide can be accomplished at a reasonable cost, because the agency has not modeled the impact of full compliance with BB2.

In the NPRM, EPA states that it modeled dispatch-only scenarios and arrived at costs of $30 or $33 per ton of CO_2 reduced, depending on whether redispatch was limited by regional or state boundaries.[20] This statement is based on the modeling described in

[20] 79 Fed. Reg. at 34865.

"Memo: Emission Reductions, Costs, Benefits and Economic Impacts Associated with Building Blocks 1 and 2" (Memo).[21]

The Memo includes projections of changes in the generation mixes resulting from BB1 and BB2 under both the regional and state scenarios. In Appendix 2, ADEQ has calculated the changes that would result from full nationwide compliance with BB2 by 2020 based on EPA's goal calculation methodology. The following table compares these projections:

2020 Generation	**Regional Model**	**State Model**	**Goal Calc.**
Coal Generation % Change	-14 %	-16 %	-26 %
NGCC Generation % Change	+17 %	+17 %	+32 %

Thus, EPA's modeling predicts much smaller changes in the generation mix, and therefore presumably in the costs, resulting from BB1 and BB2, than a straightforward application of BB2 alone to the 2012 baseline.

ADEQ believes that this discrepancy may arise in part because the "Baseline Case" for EPA's modeling apparently predicts that dramatic shifts in the national generation mix will occur by 2020 in the absence of the CPP. For example, the model apparently predicts that in less than 6 years, Arizona will go from being a substantial net exporter of electricity to a substantial net importer. ADEQ is skeptical that this projection is trustworthy and understands that Arizona utilities may be submitting an analysis with more realistic modeling for the state.

3. Infrastructure Limitations

EPA itself recognizes that:

> the ability to increase NGCC utilization rates may also be affected by infrastructure and system considerations, such as limits on the ability of the natural gas industry to produce and deliver the increased quantities of natural gas, the ability of steam EGUs to reduce generation while remaining ready to supply electricity when needed in peak demand hours, and the ability of the electric transmission system to accommodate the changed geographic pattern of generation.

In Arizona, in particular, "current and planned pipeline infrastructures …are inadequate for handling increased natural gas demand due to the CPP."[22]

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[21] http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-memorandum. The per-ton costs come from the GHG Abatement Measures TSD (June 10, 2014), which also relies on this analysis.

[22] NERC, *Potential Reliability Impacts of EPA's Proposed Clean Power Plan* at 10 (Nov. 2014).

EPA maintains, however, that "the proposal's compliance schedule provides flexibility and time for investment in additional natural gas and electric industry infrastructure if needed." [23]

In support of this conclusion, EPA appears to rely primarily on historical experience with NGCC generation increases.[24] In particular, EPA notes:

> As a reference point, NGCC generation increased by approximately 430 TWh (an 81% increase) between 2005 and 2012. EPA is calculating that NGCC generation in 2020 could increase by approximately 47% *[from] today's levels*. This reflects a smaller ramp rate in NGCC generation than has been observed from 2005 to 2012.[25]

The "ramp rate," however, should not be measured against "today's levels." State plans will not be approved until the middle of 2017, at the earliest. It is not reasonable to assume that the entities responsible for compliance with state plans will undertake the substantial investments required for compliance until those plans are finalized. If full implementation of Building Block 2 by 2020 is assumed, states will have *at most* 2.5 years to achieve redispatch.

Measured against the appropriate time frame, the ramp rate EPA is proposing is much higher than the historical rate it cites in support. The historical increase of 81 % over seven years amounts to a ramp rate of 10 % per year. The 47 % increase that would result from compliance with BB2 over at most 2.5 years amounts to a ramp rate of 18.8 % per year. In Arizona, where a 95 % increase in NGCC generation is assumed under BB2, the ramp rate would be higher still: at least 38 % per year.

In addition, because the NGCC starting point is now higher than it was in 2005, the *amount* of the increase in NGCC generation corresponding to any particular *percentage* increase will be higher now than it was then. The amount, rather than the percentage, of the increase provides a better point of comparison for purposes of determining the system's capacity for change based on historical experience. For EPA's 2005-2012 historical example, NGCC generation increased at a rate of approximately 54 GWh per year. The 47 % change required by BB2 amounts to approximately 180 GWh per year, over three times higher.[26]

Finally, past shifts from coal to NGCC generation may have reflected low hanging fruit. The principle of least-cost dispatch[27] dictates that operators would have shifted generation to NGCC where the costs of transmission and gas delivery system upgrades were lowest. The first shifts therefore would have occurred where the existing transmission and fuel delivery infrastructure was already adequate. There is thus no

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[23] 79 Fed. Reg. at 34857.
[24] See 79 Fed. Reg. at 34857, 34862-63; GHG Abatement Measures TSD at 3-10 to 3-19.
[25] GHG Abatement Measures TSD at 3-11 to 3-12 (emphasis added).
[26] Calculations supporting the last two paragraphs can be found on the "Amount of Change" spreadsheet in Appendix 2.
[27] GHG Abatement Measures TSD at 3-1.

guarantee that the future increases assumed in EPA's goal calculations can be accomplished in the same time frame as in the past.

EPA's historical examples therefore do not support its conclusion that full implementation of BB2 by 2020 is feasible.

C. Glide Path Alternatives

Unless EPA changes the way the interim goal is calculated or, in the NODA's terms, adopts an alternative "glide path," the flexibility promised by the rule will prove illusory and will not help Arizona to address its very substantial "concerns about stranded assets"[28] and reliability.

The NODA suggests that EPA would consider a state-by-state approach of modifying BB2, and thus the interim goal, to reflect such factors as infrastructure limitations and the potential for stranded investments.[29] ADEQ would favor this approach as being the most technically defensible, since it would tie a state's interim goal directly to the state-specific factors dictating the implementation schedule. ADEQ suggests that the most straightforward method of adopting this approach would be to allow each state to propose its interim goal in its section 111(d) plan.

In the absence of a state-by-state approach, EPA could consider as an alternative an interim goal that reflects a linear 10-year glide path for all building blocks, including BB1. Other than the state-by-state approach, this is the only approach that would provide states the maximum flexibility to shift emphasis from one building block to another.

II. Achievability of Building Block 2

In this section, ADEQ addresses the achievability of BB2 apart from the assumption of the 2020 implementation date. In addition, we discuss two of the NODA's proposed approaches for mitigating the stringency of BB2.

A. Failure to Consider Peak Demand

BB2 is based on EPA's conclusion that fossil fuel fired steam generation, and in particular coal-fired generation, can be redispatched to existing NGCC generation to the extent that the *annual average* capacity factor of the state-wide NGCC generation falls short of 70 %. The problem with this approach is that utilities must ensure that sufficient resources are available to meet peak, not just annual average, demand.

Peak demand occurs when consumer demand for electricity is at its highest level, which for Arizona corresponds with high temperatures in the summer months. During these months, temperatures regularly exceed 110 ° F. As a result, NGCC generation in the state is used heavily in the summer months and much less in the winter months when

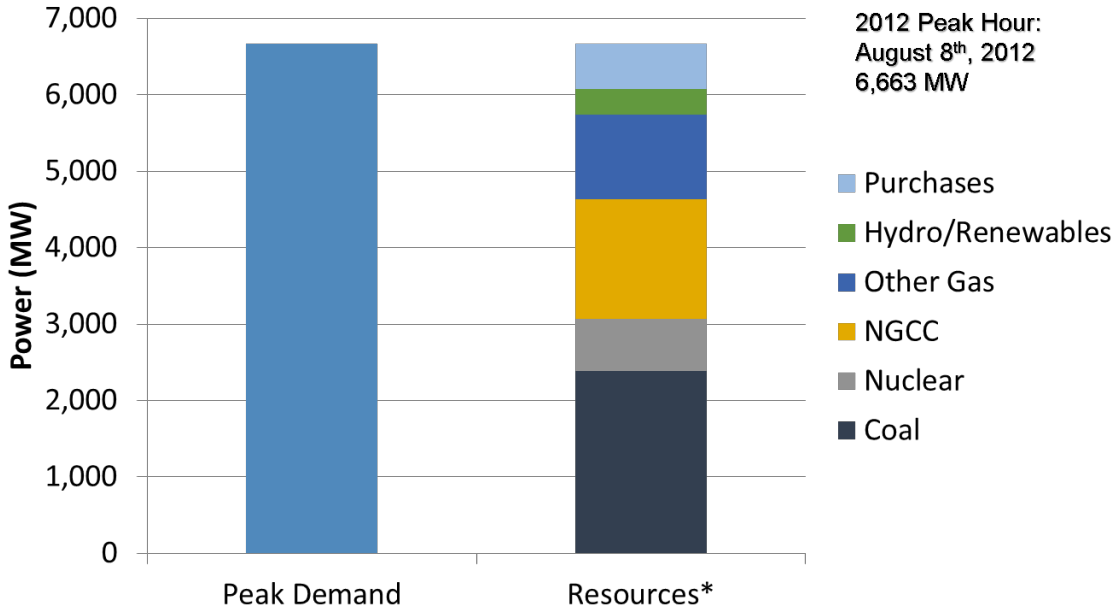
[28] 79 Fed. Reg. at 34897.

[29] 79 Fed. Reg. at 64548-49. EPA does not specifically state that this approach would be state-by-state, but it is difficult to envision how it could applied on a national basis, since these factors will vary widely on a state-by-state, and indeed an EGU-by-EGU, basis.

demand is very low. In fact, demand for electricity during the summer is routinely more than twice as high as demand during the winter. An NGCC resource could easily run at a 90% capacity factor during the peak summer hours, but have an annual capacity factor around 30%.

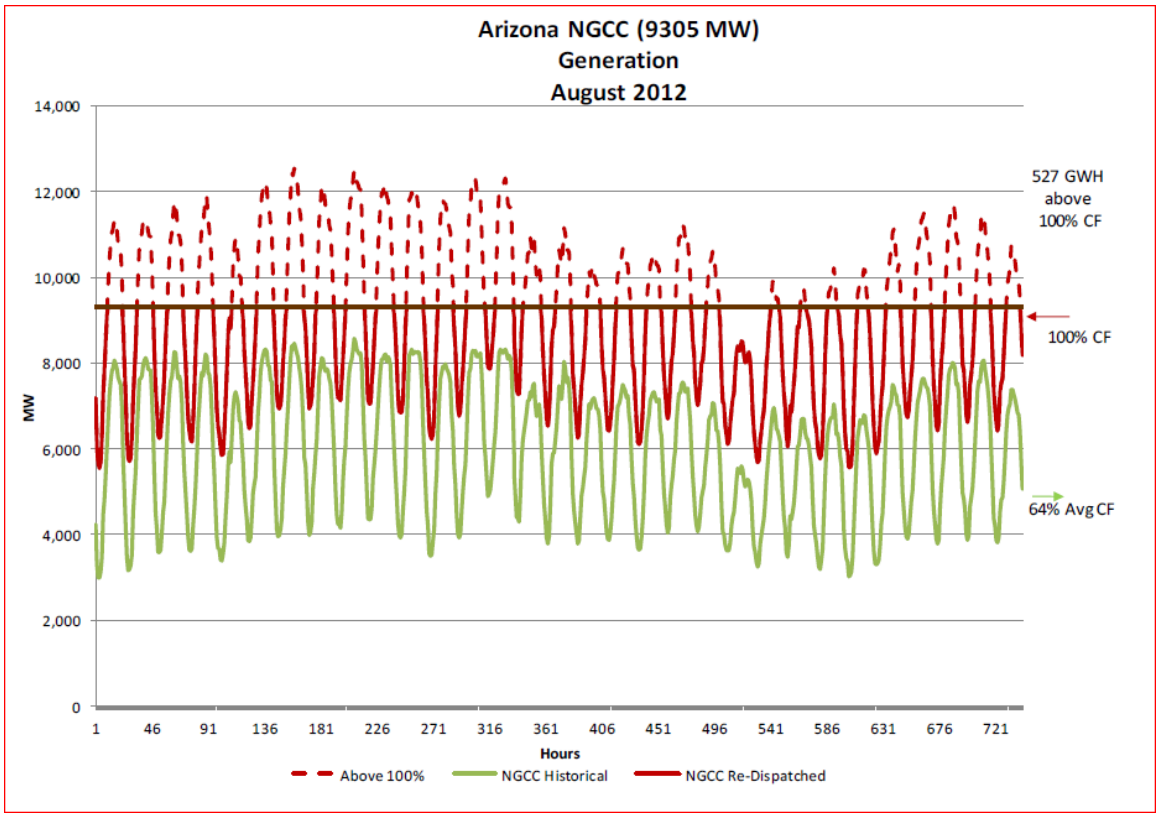
As analyses submitted by Arizona utilities, attached as Appendix 3, demonstrate, all existing NGCC resources within Arizona are in use during peak demand periods, leaving no available existing NGCC generation capacity to replace the existing coal and OG steam generation during these periods. Eliminating coal generation in the state will thus result in power shortfalls of thousands of megawatts over hundreds of hours during the summer.

For example, the following figure from the analysis by Salt River Project (SRP) shows a breakdown of the generating resources that were operating during the highest peak hour that SRP experienced in 2012:



During this hour, all available generation resources, including coal and OG steam plants, were being utilized at full capacity to meet that peak demand. Even with all SRP system resources being utilized at full capacity, SRP was still forced to purchase electricity on the open market to meet peak demand and Federally-required reserve requirements. As the graph indicates, if coal generation had not been available, the shortfall would have been over 2,000 MW greater.

The analysis submitted by APS includes a graph showing what the shortfall in the absence of coal generation would have been throughout the state for the entire month of August 2012, taking all NGCC operating in the state into account:



Actual hourly generation values for the Arizona NGCCs are indicated by the green line. Additional generation that would be required by NGCCs due to the re-dispatch of coal and natural gas steam-fired generation during the same period was added to the NGCC generation to replicate the re-dispatch as proposed by the EPA. These values are indicated by the red line. The figure also shows the maximum possible generation of NGCCs during the summer months (the black line marked 100% CF). The dashed red line shows periods when demand for NGCC generation in the absence of coal would have exceeded capacity. As the graph indicates, NGCC capacity would have been less than needed to meet demand for nearly half the month.

Arizona utilities will have to attempt to make up for these shortfalls through purchases on the short-term market, but since other states in the region also experience peak demand during the summer, it is not clear that sufficient power will be available for purchase. Full implementation of BB2 thus would jeopardize the reliability of the state's electricity grid.

ADEQ was able to find only one instance in the supporting documents for the CPP proposal where EPA attempted to address the peak demand issue:

> Existing NGCCs are already connected to both the power and natural gas networks and, while constraints to specific unit operations can occur in either or both networks during peak pipeline flow or electricity use, the rule allows for emission rate averaging across multiple units and across

> time for compliance. As a consequence of this averaging flexibility, constraints that occur at peak times are unlikely to be a barrier to achieving compliance with the rule, because these peak times are only a small percentage of the year and will constrain only a limited percentage of the state-wide NGCC fleet.[30]

It is unclear how EPA thinks "averaging flexibility" could overcome the constraints imposed by peak demand, unless the agency believes that coal and NGCC generation could switch roles, with NGCC providing base load and coal operating only when needed to satisfy peak load. If that scenario were feasible, then the ability to average coal emissions over a year could provide *partial* assistance in meeting the BB2 goal.[31] As NERC has recognized, however, operating coal generation to serve peak demand is not technically feasible.[32]

In any case, it is manifestly untrue that peak demand "will constrain only a limited percentage of the state-wide NGCC fleet." As demonstrated in Appendix 3, in the absence of coal generation, existing NGCC generation in Arizona will be substantially inadequate to meet peak demand in Arizona during the summer months, even if operating at nearly 100 % capacity.

In short, the annual average capacity factor for the state's NGCC fleet does not provide an adequate picture of the potential for redispatch. EPA should consider alternative calculation methods that account for peak demand. ADEQ anticipates submitting suggested alternatives before the close of the public comment period on December 1.

B. Potential for Stranded Investments

The potential for stranded investments is not limited to application of BB2 in 2020. Even if the implementation date for BB2 were extended to 2030, full implementation would result in substantial stranded investments in Arizona.

For example Unit 4 at the Springerville Generating Station commenced operation in December 2009. The bond financing was approximately 30 years with final bond maturity occurring in 2038. In addition, SRP recently completed air pollution control equipment upgrades on Units 1 and 2 at the Coronado Generating Station, which cost approximately $470 million. The bond financing for this project was likewise 30 years with final bond maturity occurring in 2041. These stranded cost estimates do not include those that will be incurred by AEPCO, APS, SRP, and TEP for compliance with the Regional Haze rule.

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[30] GHG Abatement Measures TSD at 3-15.

[31] It would not, however, enable Arizona or the 11 other states where BB2 results in zero coal generation after redispatch, to meet the BB2 goal. Those states would still need to offset the reductions assumed from the application of BB2 with reductions from other building blocks or from non-BSER measures.

[32] NERC, Potential Reliability Impacts of EPA's Proposed Clean Power Plan at 9.

C. Impact on Ozone Nonattainment Areas

Most existing NGCC generation in Arizona is located in Maricopa County, in or near the 8-hour ozone nonattainment area. Increased operation of NGCC units, and the corresponding increase in NO_x emissions, will make attainment of the ozone NAAQS significantly more difficult, especially if, as anticipated, EPA reduces the standard to 70 ppb or lower next month.

It is likely that to meet the state's goal, or even a substantially higher goal, Arizona utilities would need to construct new simple cycle natural gas or NGCC generation, which will be difficult, if not impossible, in or near ozone nonattainment areas. In particular, Tucson Electric Power (TEP) is substantially dependent on coal generation at the Springerville station to serve its customers and would probably have to construct simple cycle natural gas or NGCC near its Tucson customers to compensate for retirements at Springerville. Tucson has experienced 8-hour ozone concentrations in excess of 70 ppb and is therefore likely to be a nonattainment area after the ozone NAAQS is revised.

D. NODA's Expansion of BB2 Alternative

In the NODA, EPA invites comment on expanding the reach of BB2 in order to address "significant disparities in state goals between those states with little or no NGCC generating capacity, and those with significant amounts of NGCC capacity not currently being used fully."[33] Specifically, the suggested approach would be "to include an assumption about some minimum level of generation shift from higher-emitting to lower emitting sources for all states containing some fossil steam generation in the state goals." The shift could take the form of redispatch to existing NGCC, new NGCC or co-firing natural gas in existing coal-fired boilers.[34]

EPA then asks whether "the minimum generation shifts in states with little or no NGCC capacity should be in addition to" the amount of redispatch already required under BB2 or should be used to reduce the amount of redispatch required "from states with higher amounts of NGCC capacity."[35]

ADEQ takes no position on whether this BB2 alternative should be adopted, but believes that if it is, EPA should take the second approach described above. Increasing the total amount of redispatch required will necessarily increase the amount of coal-fired generation that must be retired. As discussed above, EPA's existing proposal already raises substantial concerns about infrastructure adequacy, reliability and stranded investments. ADEQ therefore would not be in favor of an expansion of the total amount of redispatch required, but recognizes that Arizona seems to bear an inequitable share of impacts under the current proposal.

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[33] 79 Fed. Reg. at 64546.
[34] 79 Fed. Reg. at 64549-50.
[35] 79 Fed. Reg. at 64550.

E. NODA's Regional Alternative

EPA also notes that the NPRM invited comment on "whether [BB2] should be applied on a regional basis" and states that this idea "might be another possible mechanism for addressing stakeholders' concerns about the disparity of the impact of" BB2.[36]

ADEQ urges EPA not to implement this alternative, if it would involve applying the BB2 calculation methodology to regions rather than states. ADEQ's analysis in Appendix 2 shows that applying BB2 on a regional basis would reduce the amount of coal generation remaining after redispatch in the West region from 109 million MWh to 21 million MWh. ADEQ believes that such a drastic reduction by 2020 or even 2030 would be completely inconsistent with section 111(d) and EPA's goal of maintaining the reliability and affordability of the electric system.

III. Conclusion

In the CPP NPRM, EPA maintains that:

> In developing the data inputs to be used in computing state goals, the EPA has estimated *reasonable rather than maximum possible implementation levels* for each building block in order to establish overall state goals that are achievable while allowing states to take advantage of the flexibility to pursue some building blocks more extensively, and others less extensively, than is reflected in the goal computations, according to each state's needs and preferences.[37]

If the above discussion makes anything clear, it is that this is not an accurate characterization of the implementation level for BB2 in Arizona. The implementation date and the amount of redispatch assumed for BB2 in Arizona result in proposed interim and final goals that jeopardize the reliability and affordability of the state's electric system.

[36] 79 Fed. Reg. at 64547.
[37] 79 Fed. Reg. at 34859.