











# BR3 Emissions

EW Brown (Baseline 2018 - Present)

Draft 03/15/2021

Estimation of Net Emissions Increases Associated with BR3 Conversion to Natural Gas Boiler

## Step 1. Project Emissions Increases

	New Units Potential to Emit Totals (tpy)								
	NO <sub>x</sub>	CO	PM <sup>2</sup>	PM <sub>10</sub> <sup>3</sup>	PM <sub>2.5</sub> <sup>4</sup>	SO <sub>2</sub> <sup>2</sup>	VOC <sup>2</sup>	H <sub>2</sub> SO <sub>4</sub> <sup>5</sup>	Lead <sup>6</sup>
BR3 NG									
Conversion <sup>1</sup>	2,533.7	3,167.2	157.3	157.3	86.5	12.4	113.9	0.2	< 0.1
Fuel Gas Heater	3.2	5.8	0.4	0.4	0.4	0.2	0.4		
<b>Facility Total</b>	<b>2,536.9</b>	<b>3,173.0</b>	<b>157.7</b>	<b>157.7</b>	<b>86.9</b>	<b>12.6</b>	<b>114.3</b>	<b>0.2</b>	<b>0.0</b>
<b>SER</b>	<b>40</b>	<b>100</b>	<b>25</b>	<b>15</b>	<b>10</b>	<b>40</b>	<b>40</b>	<b>7</b>	<b>0.6</b>
<b>Exceeds SER?</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>

Notes: 1) Data from Table 1-1, Table 1-2 of March 14, 2017 Black & Veatch Natural Gas Conversion Study of E.W. Brown 1, 2, and 3. Assuming: 8760 annual operating hours, 4820.68 Btu/hr (Table 1-1), maximum 0.12 lb/mmBtu of NO<sub>x</sub>, 0.15 lb/mmBtu of CO, and **no SCR operation, no PJFF control, no SO<sub>2</sub> control, no VOC control, and no H<sub>2</sub>SO<sub>4</sub> control.**

2) PM (PM total), SO<sub>2</sub>, and VOC values developed from factors in Table 1.4.2 of EPA's "AP 42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources".

3) Assumed PM<sub>10</sub> is the same level as PM.

4) PM<sub>2.5</sub> value is derived by ratioing the PM<sub>10</sub> value with PM<sub>10</sub> and PM<sub>2.5</sub> emission factors used in Cane Run 7's annual emissions inventory. Those emission factors came from EPA's emission inventory and analysis group guidance, 3/30/2012.

5) H<sub>2</sub>SO<sub>4</sub> calculated from 2018 EPRI "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants", example calculation #8.

6) Lead is not expected to be of any concern. This calculation is same as NGCC evaluation.

## Step 2. Contemporaneous Decreases

	Emissions Decrease from Existing Coal-Fired EW Brown 3 Shut Down (tpy)								
	NO <sub>x</sub>	CO	PM <sup>7</sup>	PM <sub>10</sub> <sup>7</sup>	PM <sub>2.5</sub> <sup>7</sup>	SO <sub>2</sub>	VOC	H <sub>2</sub> SO <sub>4</sub>	Lead
BR1,2,&3	1,088.3	192.9	228.5	221.0	198.5	709.2	23.3	120.9	0.1

Note: 7) PM, PM<sub>10</sub>, and PM<sub>2.5</sub> values include AP42 based PM condensable value.

Other emission unit decreases beyond unit and coal handling not yet calculated. Don't expect other notable decreases in VOC, CO, CO<sub>2</sub>.

	Net Emissions Increase/Decrease (tpy)*								
	NO <sub>x</sub>	CO	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	VOC	H <sub>2</sub> SO <sub>4</sub>	Lead
<b>Net Emissions Change<sup>1</sup></b>	<b>1,449</b>	<b>2,980</b>	<b>(71)</b>	<b>(63)</b>	<b>(112)</b>	<b>(697)</b>	<b>91</b>	<b>(121)</b>	<b>(0)</b>
<b>SER</b>	<b>40</b>	<b>100</b>	<b>25</b>	<b>15</b>	<b>10</b>	<b>40</b>	<b>40</b>	<b>7</b>	<b>0.6</b>
<b>Exceeds SER?</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>

\* Project emissions increase (Step 1) minus contemporaneous decreases (Step 2)