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Dear Citizens to Keep Rives Rural:

In order to estimate the maximum amount of air pollution you can expect from an 1,800 megawatt (MW) gas-fired power plant, such as Novi Energy's proposed Cornerstone Energy Center, I've analyzed data from two other new gas-fired power plants in Pennsylvania.

The Panda Liberty and Panda Patriot power plants started operation in June 2016 and July 2016, respectively. I used the actual amount of emissions released in 2016 and 2017 (latest data available) according to the Pennsylvania Department of Environmental Protection's Air Emissions Report.<sup>1</sup> Using the Energy Information Administration's Form 923 data<sup>2</sup> on the amount of megawatthours generated in those years by these facilities, I calculated an emissions rate in pounds per megawatthour (lbs/MWh) and applied that to the maximum output from an 1,800 MW power plant.

If operating at 100% capacity, an 1,800 MW modern gas-fired power plant could be expected to annually release the following:

- 6,639,225 tons of Greenhouse Gases (GHG, in carbon dioxide equivalents, or CO<sub>2</sub>e)<sup>3</sup>
- 767,073 lbs of Nitrogen Oxides (NO<sub>x</sub>)
- 332,314 lbs of Ammonia
- 219,875 lbs of Particulate Matter (PM<sub>10</sub>)
- 219,875 lbs of Fine Particulate Matter (PM<sub>2.5</sub>)
- 96,098 lbs of Carbon Monoxide (CO)
- 61,174 lbs of Sulfur Oxides (SO<sub>x</sub>)
- 26,048 lbs of Volatile Organic Compounds (VOCs)
- 18,226 lbs of Hexane
- 7,119 lbs of Formaldehyde

To put these numbers in perspective for the impacts on neighboring Ingham County...

<sup>1</sup> [http://www.depgreenport.state.pa.us/powerbiproxy/powerbi/Public/DEP/AQ/PBI/Air\\_Emissions\\_Report](http://www.depgreenport.state.pa.us/powerbiproxy/powerbi/Public/DEP/AQ/PBI/Air_Emissions_Report)

<sup>2</sup> <https://www.eia.gov/electricity/data/eia923/>

<sup>3</sup> 6,625,629 tons of CO<sub>2</sub>, plus 120.53 tons of methane (multiplied by a 20-year global warming potential of 86) plus 12.05 tons of nitrous oxide (N<sub>2</sub>O) (multiplied by a 20-year global warming potential of 268). The latest science on global warming potentials is available from the International Panel on Climate Change's Fifth Assessment Report, 2013 (see Table 8.7 on p714 in [Chapter 8](#) of the [report](#)).

If the proposed Cornerstone Energy Center were built and operated at 100% capacity, and if it were located in Ingham County, it would be the county's largest air polluter.

According to the latest available EPA National Emissions Inventory data, the total amount of industrial air pollution (not counting greenhouse gases) in Ingham and Jackson Counties were:<sup>4</sup>

Ingham County 2014 industrial air emissions:	12,269,179 lbs
Jackson County 2014 industrial air emissions:	3,308,146 lbs

The Cornerstone Energy Center would add another 1,747,803 pounds of annual pollution (not counting greenhouse gases) to the emissions total in Ingham County.

The much higher levels of emissions in 2014 were mainly due to two facilities

LBWL – Eckert Station and REO Town Plant:	7,867,811 lbs
Michigan State University:	2,811,787 lbs
30 other sources:	1,589,581 lbs

Lansing Board of Water & Light runs both Eckert Station and REO Town Plant, and their emissions are reported together. Eckert Station is a 240 MW, 3-unit coal-burning power plant. REO Town Plant is a 98 MW, 3-unit gas-burning power plant.<sup>5</sup>

Eckert Station is scheduled to close by December 2020, prior to Cornerstone Energy Center potentially coming online. Also, in 2018, Eckert station produced only 70% of the electricity they did in 2014, so their emissions in 2018 could be expected to be about 30% lower than the latest data.<sup>6</sup>

The REO Town Plant burns just gas. The Cornerstone Energy Center, if operating at 100% capacity, would generate 33 times as much energy using gas than REO Town Plant did in 2014, and is a 98 MW plant compared to the proposed 1,800 MW Cornerstone Energy Center, so it's a safe bet that Ingham's largest air polluter will be a much smaller source come 2021, and will be overshadowed by the emissions from the large new gas plant.<sup>7</sup>

Michigan State University burned coal in their campus boilers, but stopped burning coal in 2015, having transitioned to gas.<sup>8</sup> It's also a safe assumption that the Cornerstone Energy Center would produce far more pollution than the gas-based campus heating system.

The figures below are based on the assumptions that the Eckert Station closes as planned, and that the Cornerstone Energy Center cannot be operational until well after 2021.

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<sup>4</sup> See EPA National Emissions Inventory for 2014. This is the latest data, as it comes out every three years and 2017 data won't be released until 2020. <https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>

<sup>5</sup> Energy Information Administration Form 860 data.

<sup>6</sup> Energy Information Administration Form 860 and Form 923 data.

<sup>7</sup> Energy Information Administration Form 923 data.

<sup>8</sup> <https://sustainability.msu.edu/discover/msu-stops-burning-coal.html>

**Greenhouse gases** cause global climate disruption, increases in heat-related deaths, mosquito-borne diseases, and much more.

**Nitrogen Oxides (NO<sub>x</sub>)** triggers asthma attacks, and increases lifetime risk of chronic respiratory disease and stroke. The proposed 1,800 MW Cornerstone Energy Center would release enough to NO<sub>x</sub> to be the #1 industrial source of NO<sub>x</sub> in Ingham and Jackson Counties. Compared to mobile sources, the Cornerstone Energy Center would release so much NO<sub>x</sub> that it would be like adding 44% more passenger gasoline cars to the roads in Ingham County, or having nearly 3-4 times as many combination long-haul diesel trucks on Ingham County roads.

**Ammonia** is a respiratory irritant. The proposed Cornerstone Energy Center would be the county's #1 industrial source of ammonia air emissions, releasing 49 times as much as Ingham County's largest emitter (General Motors Lansing Grand River Assembly), and 33 times more than all Ingham County sources released in 2014 (when the MSU coal plant was still running). The power plant would release twice as much ammonia as all on-road mobile sources in Ingham County.

**Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)** aggravates lung disease, triggers asthma attacks, causes acute bronchitis, and can cause heart attacks in those with heart disease. The proposed Cornerstone Energy Center would be the #1 industrial source of particulate matter in Ingham and Jackson Counties, releasing twice as much as the combined emissions of the Lansing Board of Water & Light's coal-burning Eckert Station and gas-burning REO Town Plant released in 2014. The power plant would release 60% as much PM<sub>10</sub> as all on-road mobile sources in Ingham County combined, and would release 26% more PM<sub>2.5</sub> than these mobile sources.

**Carbon Monoxide** causes headaches and dizziness, and increases lifetime risk of heart disease. The proposed Cornerstone Energy Center would be the county's #1 industrial source of carbon monoxide emissions.

**Sulfur Oxides (SO<sub>x</sub>)** trigger asthma attacks, increases lifetime risk of chronic respiratory and heart diseases and stroke. The proposed Cornerstone Energy Center would be the county's #1 industrial source of sulfur oxide emissions. The power plant would release 75% more SO<sub>x</sub> as all on-road mobile sources in Ingham County combined.

**Volatile Organic Compounds (VOCs)** can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. The proposed Cornerstone Energy Center would be the county's fourth largest industrial source of VOCs.

**Hexane** affects the brain and can cause headaches, dizziness, confusion, and symptoms similar to intoxication. The proposed Cornerstone Energy Center would be the county's #1 industrial source of hexane emissions by far, releasing approximately 20 times as much as all Ingham County industrial sources combined.

**Formaldehyde** is a respiratory irritant that can cause cancer. The proposed Cornerstone Energy Center would be the county's #1 industrial source of formaldehyde emissions, releasing approximately seven times as much as all Ingham County industrial sources combined.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Ewall".

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