

**BEFORE THE
PUBLIC SERVICE COMMISSION
OF MARYLAND**

In the Matter of the Application)	
Of CP Crane LLC for a Certificate)	
Of Public Convenience and Necessity)	Case No. 9482
Authorizing the Modification of the)	
Charles P. Crane Generating Station)	
In Baltimore County, Maryland)	

DIRECT TESTIMONY OF MICHAEL F. WOODMAN

**ON BEHALF OF THE
MARYLAND DEPARTMENT OF NATURAL RESOURCES
POWER PLANT RESEARCH PROGRAM**

March 4, 2019

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Q. PLEASE STATE YOUR NAME, OCCUPATION AND CURRENT POSITION.

A. My name is Michael F. Woodman. My business address is Maryland Department of the Environment (MDE), Air and Radiation Administration (ARA), 1800 Washington Blvd, Suite 730, Baltimore, Maryland 21230-1720. I am the Manager of the Air Quality Measurements, Modeling, and Analysis Division of the Air Monitoring Program of MDE-ARA. A statement of my educational background, occupational history, and professional qualifications is appended to this testimony as Appendix A.

Q. PLEASE EXPLAIN YOUR ROLE WITH RESPECT TO THE ENVIRONMENTAL REVIEW OF CP CRANE, LLC COMBUSTION TURBINE REPOWERING PROJECT (CP CRANE REPOWERING PROJECT) APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IN THIS CASE.

A. My role is focused on assessing potential impacts to air quality and other environmental resources caused by air emissions from the proposed CP Crane Repowering Project (Project). I performed and supervised air impact assessments to support the Maryland Department of Natural Resources Power Plant Research

1 Program (PPRP) and the Maryland Department of the Environment Air and
2 Radiation Administration's (MDE-ARA) review and evaluation of the Project.

3 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS**
4 **PROCEEDING?**

5 A. The purpose of my testimony is to summarize the air impact assessments that I
6 conducted and supervised for the proposed Project. The air impact assessments
7 that were conducted are also discussed in PPRP's Project Assessment Report
8 (PAR) being filed in this case, entitled *Project Assessment Report for the Modification*
9 *of the CP Crane Generating Station* ((PPRP Exhibit__(SS-3)).

10 **Q. WHAT SOURCES OF INFORMATION DID YOU RELY ON IN**
11 **CONDUCTING YOUR EVALUATION?**

12 A. I reviewed the portions of CP Crane's May 2018 application for Certificate of
13 Public Convenience and Necessity (CPCN) Environmental Review Document that
14 are relevant to evaluating air impacts, as well as the Applicant's August 2018
15 supplemental filing that included a revised Environmental Review Document. In
16 addition, I used U.S. Environmental Protection Agency (EPA) guidance documents
17 and information from air quality engineering and scientific literature in specific
18 analyses, as detailed in PPRP's PAR.

19 **Q. PLEASE DESCRIBE THE TYPES OF AIR IMPACT ASSESSMENTS THAT**
20 **YOU CONDUCTED FOR THE PROPOSED PROJECT.**

21 A. I performed and supervised an independent review of the CP Crane analysis of
22 potential impacts related to requirements of the National Ambient Air Quality
23 Standards (NAAQS).

24 **Q. WHAT WAS THE OBJECTIVE OF YOUR EVALUATION?**

1 A. The objective of my evaluation was to assess compliance with Federal and State air
2 quality impact requirements related to NAAQS requirements.

3 **Q. HOW DID YOU ACCOMPLISH THIS OBJECTIVE?**

4 A. I reviewed the air quality modeling of potential air emissions related impacts that
5 CP Crane performed for the proposed Project, and I supervised the independent
6 replication of the modeling in order to verify the results reported by CP Crane.

7 **Q. PLEASE DEFINE THE TERM “NAAQS”.**

8 A. NAAQS are ground-level concentrations of specific pollutants set at levels that the
9 EPA has determined are protective of the public health and welfare with an ample
10 margin of safety. NAAQS are concentrations of pollutants expressed in terms of
11 parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). There are
12 currently NAAQS established for six pollutants – nitrogen dioxide (NO_2), sulfur
13 dioxide (SO_2), particulate matter (PM), ozone, carbon monoxide (CO), and lead.
14 “Particulate matter” is categorized by size (e.g., PM_{10} represents particulate matter
15 less than 10 microns in diameter; $\text{PM}_{2.5}$ represents particulate matter less than 2.5
16 microns in diameter). These pollutants are referred to as “criteria” pollutants.
17 Federal and state air quality agencies monitor ambient levels of these criteria
18 pollutants to determine whether any particular part of the country is in
19 “attainment” or “nonattainment” with the NAAQS. Attainment areas are those
20 with ambient pollutant concentrations below the NAAQS; nonattainment areas are
21 those with ambient pollutant concentrations above the ambient standards.

22 **Q. CAN YOU PLEASE CHARACTERIZE THE AMBIENT AIR QUALITY IN THE**
23 **VICINITY OF THE PROPOSED CP CRANE REPOWERING PROJÉT?**

24 A. The proposed CP Crane Repowering Project is located in an area of Baltimore
25 County, where the existing CP Crane facility is located, that is designated as

1 nonattainment for ozone and SO₂, and designated as attainment for the remaining
2 NAAQS criteria pollutants (NO₂, PM₁₀/PM_{2.5}, CO and Pb).

3 **Q. PLEASE EXPLAIN THE TERMS “PREVENTION OF SIGNIFICANT**
4 **DETERIORATION” (PSD) AND “NONATTAINMENT NEW SOURCE**
5 **REVIEW” (NA-NSR)?**

6 A. PSD refers to a set of regulations that apply to “attainment” areas, which are areas
7 of the country that are currently meeting the NAAQS for a given criteria pollutant.
8 The PSD regulations contain requirements for new and modified sources that emit
9 pollutants above a significant emissions threshold. The pollutant specific
10 thresholds are defined in the regulations and are expressed in tons per year. The
11 PSD regulations contain requirements that require an ambient impact assessment
12 be completed. The ambient air impact provisions for PSD sources require that
13 emissions from the source produce impacts that are less than PSD “increments”
14 (i.e. allowable incremental increases in ambient pollution levels), and that the
15 source does not cause or contribute to a violation of the NAAQS. Compliance with
16 the PSD ambient requirements is generally evaluated through the use of air quality
17 dispersion models, applied in accordance with guidance established by EPA. The
18 Repowering Project did not have a significant net emissions increase for any
19 criteria pollutant and was therefore not subject to PSD requirements.

20 NA-NSR regulations apply to nonattainment areas (i.e., locations that are not
21 meeting the NAAQS for a particular pollutant). Under NA-NSR, a proposed
22 project which has a projected emissions increase above an applicable non-
23 attainment threshold limit is deemed to be a significant emissions increase, and
24 therefore subject to NA-NSR requirements. The Repowering Project did not have a
25 significant net emissions increase for any criteria pollutant and was therefore not
26 subject to NA-NSR requirements.

27 A detailed assessment of the netting analysis is provided in Section 4.4 of the PAR.

1 **Q. WHAT EVALUATIONS RELATED TO NAAQS MUST AN APPLICANT**
2 **CONDUCT TO MEET NAAQS REQUIREMENTS?**

3 A. As part of the minor source permitting process a NAAQS review needs to be
4 conducted. Applicants must demonstrate that emissions from the proposed project
5 are less than major source threshold and will not cause or contribute to the
6 violation of any applicable NAAQS. The NAAQS impact demonstration is
7 conducted through air quality dispersion modeling study. Evaluation of the air
8 quality impact will include an analysis of ambient air quality in the area that the
9 emissions from the NAAQS source will affect. This ambient air quality analysis is
10 carried out using measured air quality data. The measured data are provided
11 either by the applicant through pre-construction monitoring, or by the use of
12 appropriate, representative data obtained from existing monitoring stations.

13 **Q. WHAT GUIDANCE IS AVAILABLE FOR SELECTING AN AIR QUALITY**
14 **MODEL FOR CONDUCTING NAAQS AIR QUALITY MODELING, AND**
15 **HOW WAS IT APPLIED FOR THE CP CRANE REPOWERING PROJECT?**

16 A. The EPA has published the *Guideline on Air Quality Models*, which is [codified in
17 Appendix W to 40 CFR Part 51] referenced in the NAAQS regulations. These
18 guidelines establish preferred models for generalized modeling situations. MDE-
19 ARA used the most recent version of the *Guideline on Air Quality Models*, which
20 was published in the Federal Register on January 17, 2017, to complete their
21 analysis. For the CP Crane Repowering Project, the preferred model according to
22 EPA's guideline is AERMOD. AERMOD was selected and used by CP Crane in the
23 air quality evaluations documented in its CPCN application, and by MDE-ARA in
24 the review of the application.

25 **Q. WHAT IS THE RECOMMENDED METHODOLOGY FOR EVALUATING THE**
26 **IMPACTS OF NAAQS SOURCES ON AMBIENT AIR QUALITY, AND HOW**

1 WAS THE METHODOLOGY APPLIED FOR THE CP CRANE REPOWERING
2 PROJECT SOURCES?

3 A. The recommended methodology for conducting air quality modeling for NAAQS
4 sources is contained in EPA's modeling guidelines and in various policy
5 documents. To summarize, NAAQS modeling must address three important
6 components: (1) receptor locations to determine maximum impacts, (2)
7 meteorological inputs that are representative of the area where the source is
8 located, and (3) source inputs that adequately represent operations and emissions
9 from the sources being modeled.

10 Q. IS IT YOUR OPINION THAT THE METHODOLOGY SELECTED AND
11 APPLIED BY THE APPLICANT IS APPROPRIATE FOR DETERMINING THE
12 AMBIENT IMPACTS FROM THE PROPOSED CP CRANE REPOWERING
13 PROJECT?

14 A. Yes. We have evaluated the modeling methodology, including the model used, the
15 development and application of the meteorological database, development of the
16 source operational scenarios, and the actual model application. Our conclusion
17 based on this evaluation is that the methodology is adequate to determine the
18 impact of significant emissions from the CP Crane Repowering Project. A detailed
19 evaluation of the methodology is contained in Section 4.4.2.2 of PPRP's Project
20 Assessment Report (PPRP Exhibit__(SS-3)).

21 Q. WHAT WERE THE RESULTS OF THE MODELING FOR THE CP CRANE
22 REPOWERING PROJECT SOURCES?

23 A. As summarized in Section 4.4.2.3 of PPRP Exhibit__(SS-3), maximum Project
24 impacts are projected to demonstrate compliance with all applicable NAAQS.

1 **Q. DID MDE-ARA CONDUCT ITS OWN MODELING EVALUATIONS TO**
2 **VERIFY THE NAAQS FINDINGS, AND IF SO, WHAT WERE THE RESULTS**
3 **OF THOSE EVALUATIONS?**

4 A. Yes, MDE-ARA, on behalf of PPRP, conducted independent modeling for affected
5 criteria pollutants (NO₂, PM₁₀, PM_{2.5}, CO and Pb) to verify the analyses presented
6 by CP Crane and concluded that the proposed CP Crane Repowering Project will
7 not cause or contribute to any exceedance of the applicable NAAQS.

8 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?**

9 A. Yes.

**APPENDIX A
STATEMENT OF QUALIFICATIONS
for Michael F. Woodman**

Professional Background

As Manager of the Air Quality Measurements, Modeling and Analysis Division, Air Monitoring Program, Air and Radiation Administration (ARA) of the Maryland Department of the Environment (MDE), Mr. Michael F. Woodman has more than 30 years of experience in air modeling. This includes 19 years with MDE and 11 years in private sector environmental consulting as an air quality scientist. As a Division Manager, Mr. Woodman has primary responsibility for overseeing staff responsible for air quality forecasting, data analysis and modeling. Over the past several years, Mr. Woodman has been extensively involved in modeling of the several electric generating stations and independent power producers in Maryland. These are as follows: Old Dominion Electric Cooperative's (ODEC's) Rock Springs, Mirant Chalk Point, Mirant Dickerson, ODEC Wildcat Point, Dominion Cove Point LNG facility, Keys Energy Center, the CPV Maryland St. Charles Energy Center, and the Mattawoman Energy Center. These projects have involved the reviewing of modeling protocols and analyses of ambient air quality impacts to ensure that all applicable federal and state regulations are properly accounted for in the modeling analysis.

Education

B.S. Meteorology, 1988, University of Lowell, Lowell, MA.

Professional Affiliations and Participation

Mr. Woodman is a member of the American Meteorological Society (AMS).