STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. _____

Petition of GLOBALFOUNDRIES U.S. 2 LLC for)
a Certificate of Public Good Pursuant to 30 V.S.A.)
§ 231 to Operate a Self-Managed Utility)

PREFILED TESTIMONY OF

GREGORY L. RIEDER

ON BEHALF OF GLOBALFOUNDRIES U.S. 2 LLC

March 15, 2021

Summary of Testimony

Gregory L. Rieder provides an overview of the proposed Self-Managed Utility structure and associated agreements with Green Mountain Power Corporation and Vermont Electric Power Company, Inc. Mr. Rieder also provides background on GLOBALFOUNDRIES U.S. 2 LLC's business, facilities, and contributions to the Vermont economy. Finally, Mr. Rieder describes the process and factors that led GLOBALFOUNDRIES U.S. 2 LLC to the Self-Managed Utility structure, including the unique features of its operations that supports this structure, the critical importance of managing its own energy costs to GLOBALFOUNDRIES U.S. 2 LLC's ability to succeed in a competitive global market, and the competitive pressures the company's Vermont facility faces due to its costs for electricity.

EXHIBIT LIST

Exhibit GF-GR-1:	Curriculum Vitae of Gregory L. Rieder
Exhibit GF-GR-2:	March 12, 2021 Memorandum of Understanding between Vermont Electric Power Company, Inc., Green Mountain Power Corporation ("GMP"), and GLOBALFOUNDRIES U.S. 2 LLC ("Transmission MOU")

Subsidiary Exhibits to Transmission MOU:

Exh. MOU-1 Letter of Intent between GMP and GLOBALFOUNDRIES U.S. 2 LLC

Exh. MOU-2 Map depicting portion of GLOBALFOUNDRIES U.S. 2 LLC land in the Town of Essex and Village of Essex Junction to be excluded from GMP service territory

Exh. MOU-3 List of GMP-owned transmission facilities at Substations 86 and 87 and 115kV transmission lines 1591, 1592, 1593 and 1594 to be transferred to Vermont Transco LLC

Exh. MOU-4 List of facilities owned by GLOBALFOUNDRIES U.S. 2 LLC known as the Willison Substation to be transferred to GMP

Exh. MOU-5 List of GMP-owned facilities known as Substations 86 and 87 to be transferred to GLOBALFOUNDRIES U.S. 2 LLC

Exh. MOU-6 One-line diagram depicting existing transmission facility ownership

Exh. MOU-7 One-line diagram depicting proposed transmission facility ownership

Introduction

Q1. Please state your name and business address.

A1. My name is Gregory L. Rieder. My business address is 1000 River Street, Essex Junction, Vermont 05452.

Q2. Please describe your occupation.

A2. I presently serve as Principal Member of the Technical Staff for GLOBALFOUNDRIES U.S. 2 LLC ("Petitioner") at its facility in Village of Essex Junction and Town of Essex, Vermont (the "Essex Facility").

Q3. On whose behalf are you submitting testimony?

A3. I am testifying on behalf of Petitioner GLOBALFOUNDRIES U.S. 2 LLC (part of a family of companies called GLOBALFOUNDRIES), which seeks through this proceeding to establish an independent, self-managed utility to procure and deliver electricity for its Essex Facility.

Q4. Please describe your responsibilities at GLOBALFOUNDRIES.

A4. I am primarily responsible for the engineering and operations of the electrical distribution system at Petitioner's Essex Facility, including the 115kV Substations and 15 kV distribution systems.

Q5. What is the purpose of your testimony?

A5. My testimony addresses several distinct topics. I begin first by describing GLOBALFOUNDRIES' business, the unique aspects of its operations and infrastructure that support this proposal, the competitive pressures that its Essex Facility faces, and the critical need to control and reduce energy costs to keep

GLOBALFOUNDRIES a competitive player in its market. I also testify about the Essex Facility's impact on the State and local economies.

Second, I provide an overview of Petitioner's history of engagement with Green Mountain Power Corporation ("GMP") and the Public Utility Commission ("Commission") in pursuit of a solution to manage its energy costs, including the term contract with GMP that the Commission approved in 2018. I further describe the collaborative discussions between GLOBALFOUNDRIES and GMP that took place following approval of the term contract, exploring longer term alternatives for GLOBALFOUNDRIES to meet its goals of stable, reliable, and competitively priced electricity.

Third, I describe the proposed Self-Managed Utility and related agreements that GLOBALFOUNDRIES has negotiated with GMP and with the Vermont Electric Power Company, Inc.

Q6. Please summarize your educational background and your work experience.

A6. I have a B.S. in Electrical and Computer Engineering from Clarkson University and am a registered Professional Engineer certified by the State of Vermont. I have been responsible for the electrical distribution system of the Vermont facility currently owned by GLOBALFOUNDRIES U.S. 2 LLC for over twenty years; before GLOBALFOUNDRIES U.S. 2 LLC acquired the facility in 2014, I worked for IBM and held a role similar to my current position, and for two years before that I was employed by a contractor as a field service engineer assigned to the facility during various substation installations. I have also previously served as a

Senior Engineer with GMP, among other roles. A copy of my curriculum vitae is attached as Exhibit GF-GR-1.

GLOBALFOUNDRIES' Business and Economic Impact

Q7. Please provide a general description of GLOBALFOUNDRIES' business.

A7. GLOBALFOUNDRIES is a semiconductor design, development, fabrication, and innovation company headquartered in Santa Clara, California, with approximately 15,000 employees worldwide. GLOBALFOUNDRIES researches, designs, and manufactures integrated circuits in high volume at fabrication plants around the world. It owns semiconductor manufacturing facilities in the Village of Essex Junction and Town of Essex, Vermont; two sites in New York (Malta and East Fishkill[1]); Dresden, Germany; and Singapore.

Q8. Describe the competitive pressures facing GLOBALFOUNDRIES' business.

A8. The semiconductor industry in which GLOBALFOUNDRIES participates is very capital intensive and cost sensitive. The business is measured in terms of the Average Selling Price of the consumer products served, and customers expect year-over-year reductions in the Average Selling Price in order to meet consumer demands. That means unit costs, driven by operation overhead and capital investment, must come down over time to stay competitive.

Semiconductor manufacturers and their customers must constantly innovate to survive. Given the consumer-driven nature of the business, market life cycles are short (1 to 2 years) as retail products such as cell phones are developed,

[1] In 2019, GLOBALFOUNDRIES U.S. 2 LLC entered into an agreement to transition ownership of the East Fishkill facility to ON Semiconductor; the transition will not be complete, however, until the end of 2022.

brought to market, and then replaced with the next model. This continuous upgrade cycle means that chip manufacturers need to be ready to provide technologies and features available to meet the next product cycle. This takes continuous capital investment to retool or modify production; a lack of investment in the next product development can quickly result in demand erosion, which translates into consolidation, cessation of operations, and job loss.

Q9. How does GLOBALFOUNDRIES address these competitive pressures to maintain and grow its business?

A9. First and foremost, GLOBALFOUNDRIES closely tracks its costs per unit and it aims to lower them year-over-year in order to remain competitive with the larger players in the industry and allow it to continue to make necessary capital investments in production.

GLOBALFOUNDRIES has also recently embarked on a new, company-wide strategy, announced in 2019, called "Pivot," which is designed to solidify GLOBALFOUNDRIES' place among the handful of commodity semiconductor chip manufacturers in the world. The Pivot strategy recognizes that Moore's Law—the long-held industry tenet that chips could become twice as small and computers half as expensive every two years—is no longer the rule; the pace of "smaller, faster, less expensive" is slowing, meaning that the costs of investing in new technology are increasing. With that in mind, GLOBALFOUNDRIES made a conscious decision to move away from leading edge technology investment in smaller and smaller chips, in favor of increasing the usage, differentiation, and specialization of the chips it manufactures. This decision is supported by the

market research that the overall demand for these mature and mainstream products is increasing, as the tenet of Moore's Law shifts toward adding new features to products, rather than just shrinking size and increasing capacity over time. The total available market for chips greater than 12 nanometers was $56 billion in 2018, and is expected to grow to $65 billion in 2022. GLOBALFOUNDRIES is focused on this segment of the business for that reason.

Q10. How, if at all, do energy efficiency and environmental initiatives contribute to GLOBALFOUNDRIES' competitive strategy?

A10. Environmental stewardship and efficiency are directly intertwined with GLOBALFOUNDRIES' business goals. Since acquiring the Vermont Facility from IBM in 2014, GLOBALFOUNDRIES has demonstrated a deep global commitment to social and environmental responsibility. The company has a strong set of corporate eco-efficiency goals, generally focused on the reduction of water use, electricity use, greenhouse gas emissions and waste, and publishes a report each year on its progress toward these goals, which can be found on the company's website.[2] These goals apply to all manufacturing sites in the company (Singapore, Germany, New York, and Vermont) in aggregate, and each site also has its own goals. The company is currently engaged in a process of updating its long-term eco-efficiency goals (known as the "Journey to Zero"), with an expected announcement in the summer of 2021.

GLOBALFOUNDRIES' current goals for 2018-2021 strive to minimize environmental and climate-related impacts from the company's operations

[2] https://www.globalfoundries.com/sites/default/files/2021-01/gf_2020_csr_report.pdf

through pollution prevention and resource conservation, using 2018 levels as a baseline. GLOBALFOUNDRIES measures progress toward its 2021 goals using key environmental performance indicators, reflecting resource consumption, environmental emissions, waste generation, and regulatory compliance. These include a goal of 15% reduction in normalized electricity consumption, achieving savings of 86 GWh annually, and an 18% reduction in normalized greenhouse gas emissions, for a reduction in annual greenhouse gas emissions of 11,900 metric tons of carbon equivalent.

Recent examples of GLOBALFOUNDRIES' initiatives to achieve these goals include a chiller plant optimization project at its Malta, New York facility that has produced annual savings in electricity usage of 5.5 GWh, and the installation of rooftop solar at its Singapore facility, meeting 2.2 GWh of its electricity consumption annually. As discussed below, GLOBALFOUNDRIES has also made over $7 million in energy efficiency investments in its Vermont facility since 2015, saving over 12.3 million kWh of electricity.

Q11. Please describe GLOBALFOUNDRIES U.S. 2 LLC's facility in Vermont.

A11. GLOBALFOUNDRIES U.S. 2 LLC has two campuses in Vermont. The campus in the Village of Essex Junction and Town of Essex, Vermont (the "Essex Campus") has 30 buildings on approximately 280 acres totaling more than 3.5 million square feet, including over half a million square feet of high-tech clean room space. The Essex Facility develops and manufactures semiconductor products including logic, microprocessor, and custom microchips. These devices

are used in products such as cell phones, routers, and other electronics produced by technology companies worldwide.

The campus located in Williston, Vermont (the "Williston Campus") is part of GLOBALFOUNDRIES U.S. 2 LLC but would not be served by the proposed Self-Managed Utility and is therefore not directly at issue in this proceeding. The site, comprising approximately 440 acres zoned for industrial, agricultural and low density residential, has three buildings with a total of 423,000 square feet. There is a separate 17,500 square-foot central utility plant. In addition, the site houses a 115kV substation with two 20/37 MVA transformers providing power to the Williston Campus. GLOBALFOUNDRIES currently uses some of the facilities located on the Williston Campus, but is planning to shift those uses over to the Essex Campus in the near future. Meanwhile, GLOBALFOUNDRIES has listed the Williston Campus for sale.

Q12. What financial impact does GLOBALFOUNDRIES have on the State and local economies?

A12. GLOBALFOUNDRIES' Vermont operation has a significant positive impact on the economy in Chittenden County and the State of Vermont as a whole. We are the largest for-profit employer in Vermont. In 2019, the Vermont operation provided $270 million in total annual compensation, including benefits, to employees, and the average total compensation package is $117,700 per year. GLOBALFOUNDRIES currently has 2,189 Vermont employees and continues to hire. Since GLOBALFOUNDRIES started its Vermont operations, GLOBALFOUNDRIES has hired 1,125 employees (671 production employees,

317 professional employees, and 127 technicians). GLOBALFOUNDRIES also brings on dozens of interns and apprentices each year, and recently launched an apprentice program designed to bring 60 additional students to the facility over the next four years.

Since launching its Vermont operation, GLOBALFOUNDRIES has invested $380 million in capital improvements and has another $150 million under consideration for the upcoming years. In addition, GLOBALFOUNDRIES procures approximately $70 million per year of goods and services from dozens of Vermont providers. This includes, for example, production-related equipment and parts, construction contractors (plumbers, electricians, etc.), facilities and construction management services, environmental services, HVAC services, and so on.

All of this economic activity is felt statewide. GLOBALFOUNDRIES' employees reside in 13 of the 14 counties in Vermont, and indirect economic activity supports 5,473 other jobs in the state, according to the economist Arthur Woolf. GLOBALFOUNDRIES paid $2.6 million in 2020 in property taxes, and its employees also pay income, property and sales taxes in the local communities. In addition, approximately $8.6 million was withheld from employees' pay checks for state income taxes in 2020. While the amount withheld may not directly correlate to taxes paid, according to Arthur Woolf the total state income taxes paid by GLOBALFOUNDRIES' employees is very likely the largest sum of income taxes paid by the employees of any single private sector firm in Vermont.

Electricity Usage and Costs at Petitioner's Vermont Facility

Q13. What are GLOBALFOUNDRIES U.S. 2 LLC's electricity needs for its Vermont facility?

A13. Electricity is a vital component of our manufacturing and testing processes. In addition to providing power to operate the thousands of pieces of production equipment, we use electricity for numerous direct support processes and equipment, including HVAC, environmental control equipment, deionized water, high purity gases and chemicals, lighting, central utility plant equipment, chillers, compressors, pumps, and data processing equipment. Production at the Essex Facility occurs 24 hours per day, 365 days per year, which results in a relatively high energy demand that is very stable.

Q14. Are there ways in which GLOBALFOUNDRIES differs from other electricity consumers in Vermont?

A14. Yes. GLOBALFOUNDRIES is situated differently from all other electricity consumers in a number of respects. To start with, GLOBALFOUNDRIES has a very large, stable load, and has consistently consumed more electricity than any other single GMP customer over recent decades. The electricity consumption for our Vermont facility totaled approximately 398 million kilowatt-hours (kWh) in 2020; before that, it was 407 million kWh in 2014, 409 million kWh in 2015, 403 million kWh in 2016, 404 million kWh in 2017, 405 million kWh in 2018, and 397 million kWh in 2019. This places our facility as the largest electricity user in the State by a considerable margin. For context, we use more electricity on an

annual basis than the entire City of Burlington, and would place third in load size among the Vermont distribution utilities.

GLOBALFOUNDRIES also uniquely takes service from GMP at 115 kV, directly from the State transmission grid. As far as I know, GLOBALFOUNDRIES is the only customer in Vermont that takes retail service at the 115 kV transmission level. Unlike other customers, we also own and pay to maintain the 115kV step-down transformers to which the transmission service is connected, as well as our internal on-site distribution system. In addition, GLOBALFOUNDRIES pays for all the operations and maintenance cost for the 115kV equipment (i.e. Breakers, Circuit Switchers, etc.) within all three substation yards.

Q15. How much does GLOBALFOUNDRIES pay for the electricity consumed by its Vermont facility?

A15. In 2020 GLOBALFOUNDRIES paid approximately $36.1 million for the electricity we purchased from GMP. That figure does not fully capture our electricity costs, however, as it omits investments in efficiency through the Self-Managed Energy Efficiency Program and approximately $3 million in onsite grid maintenance and capital improvements. Taking into account these costs, our effective rate for electricity in 2020 was approximately $0.10 per kilowatt-hour (kWh).

Q16. What has been the effective blended rate for GLOBALFOUNDRIES over the past 10 years?

A16. Even though we and our predecessor focus on energy efficiency and have advocated for term contracts to help manage our overall energy costs, we have seen unit costs rise for electricity. Our effective blended rate cost of electricity in Vermont has increased from $82.10 per megawatt-hour (MWh) in 2010 to $94.00 per MWh in 2018, which represents an increase of 14.5%. In 2018, GLOBALFOUNDRIES and GMP negotiated a Term Contract to freeze the effective blended rate at $91.00 per MWh from January 1, 2019 to September 30, 2022. The Term Contract helped mitigate our cost of electricity in Vermont, and the company greatly appreciates that measure. However, as I will explain later in my testimony, the company is now proposing a longer-term solution to the problem it faces.

Q17. Why are electricity costs significant for GLOBALFOUNDRIES' Vermont operations?

A17. To put it simply, electricity is a key operational need for semiconductor manufacturing, as shown by our very high load, and therefore our energy costs are a primary determinant of the competitiveness of GLOBALFOUNDRIES' operations in this state. The cost of electricity for GLOBALFOUNDRIES' Vermont site now represents nearly fifty percent of the operational cost of the site to support manufacturing—and thus has a significant impact on its unit costs and competitiveness.

As I described above, there are strong competitive pressures to lower prices within the semiconductor industry, for which reason GLOBALFOUNDRIES tracks and constantly seeks to reduce its costs per unit.

GLOBALFOUNDRIES has had some success stabilizing and reducing costs in key areas, including through negotiating price reductions and volume purchase agreements for commodities, materials, and services. GLOBALFOUNDRIES' efforts to manage power costs at its Vermont facility, however, have not proven sufficient to overcome the sustained cost pressures that affect electric rates. In addition, as GLOBALFOUNDRIES has reduced other cost centers for its Vermont operations, the relative impact of electricity costs has increased. This is particularly true given that our Vermont facility competes with manufacturing facilities that enjoy significant cost advantages, including those located elsewhere in the United States, as well as overseas.

Q18. Has GLOBALFOUNDRIES attempted to manage electric costs at the Vermont facility through demand reduction?

A18. Yes. Engaging in energy efficiency measures makes good business sense as well as environmental sense, and, as discussed above, is a core component of GLOBALFOUNDRIES' corporate policies. Consistent with these policies, GLOBALFOUNDRIES Vermont (and IBM Vermont before it) has aggressively pursued energy efficiency. Over the last 20 years, assisted by state policy designed to allow businesses like GLOBALFOUNDRIES to develop their own robust efficiency programs, the GLOBALFOUNDRIES site implemented approximately 2,000 energy efficiency and conservation measures. Many of those measures have been recognized through a variety of awards on both a state

and regional level.[3] While GLOBALFOUNDRIES continues to look for opportunities to reduce its electricity demand as a means of controlling cost, it is already a leader in this area, and its substantial efforts to date have not been sufficient to control the increase in its overall energy costs.

Q19. How do GLOBALFOUNDRIES' power costs in Vermont compare to costs for its facilities in other areas?

A19. GLOBALFOUNDRIES' electricity costs at the Vermont facility are notably higher in comparison with its other facilities. Currently, the electricity cost difference between GLOBALFOUNDRIES' Vermont facility compared to its two New York facilities is in the range of $15 million to $18 million annually—meaning roughly 90% higher energy cost for the Vermont site when compared to GLOBALFOUNDRIES' sites in New York:

Facility	2020 Unit Cost / kWH	Total
Vermont Facility (actual)	$0.091	$36.1M
East Fishkill Facility	$0.055	$21.2M
Malta Facility	$0.046	$18.3M

Again, the Vermont facility also has to pay to operate and maintain the three GLOBALFOUNDRIES on-site electric switchyards. At GLOBALFOUNDRIES' East Fishkill facility, the switchyards are owned by the utility, so the cost of operating and maintaining the switchyards is borne by the utility there and included in the per kWH unit cost. This overall cost disparity places the Vermont

[3] Indeed, the site has been widely recognized for its efficiency and pollution prevention programs. In 2019, for the third time, the facility was awarded the National Pollution Prevention Roundtable (NPPR) "P2 Champion Award" (in this instance, for a project addressing process and chemical optimization in chemical mechanical polish operations).

facility at a significant overall operating cost disadvantage, one that is not sustainable in the long run.

Q20. Are there other ways in which GLOBALFOUNDRIES' other facilities enjoy a competitive edge over the Vermont plant?

A20. Yes, our other sites offer some additional flexibilities and benefits not available in Vermont. For example, our Dresden plant operates a combined heat and power unit that provides essentially all energy needed to operate the site; the Singapore site receives substantial subsidies from the government for manufacturing costs; and GLOBALFOUNDRIES also receives power cost reductions in New York.

Prior Engagement in Proceedings before the Commission

Q21. Has GLOBALFOUNDRIES raised its concerns with the cost of electricity in any prior proceedings before the Public Utility Commission?

A21. Yes. GLOBALFOUNDRIES—and IBM before it—has regularly participated in proceedings before the Commission to communicate concerns about the impact of rising electricity costs on the ability of GLOBALFOUNDRIES' Vermont plant to compete with semiconductor manufacturing plants elsewhere in the country and around the world.

Q22. Please describe GLOBALFOUNDRIES' and IBM's history of engaging with the Commission on electricity cost issues.

A22. For several decades, GLOBALFOUNDRIES and IBM have sought relief in various proceedings before the Commission. GLOBALFOUNDRIES and IBM have intervened in GMP rate cases on multiple occasions, and have also at times

worked collaboratively with GMP to negotiate mechanisms to provide rate relief and provide incentives for the Essex Facility to remain in operation and grow.

In the late 1990s and early 2000s, IBM and GMP negotiated a series of special contracts that took the form of economic development agreements, approved by the Commission in Docket No. S.C. 294 (Order of 5/21/1998), Docket No. S.C. 433 (Order of 12/8/2000), and Docket No. 6867 (Order of 12/22/2003). These contracts only offered rate incentives for new incremental load, and thus did not fully address the persistent cost disadvantage facing the Essex Facility.

In 2006, IBM intervened in a rate proceeding (Docket Nos. 7175/7176) to oppose a rate increase sought by GMP. As a result of those efforts, the Commission approved a proposal by GMP to offer large industrial consumers such as IBM an option to participate in the procurement of power (see Order of 12/22/2006). This program, referred to as "Virtual Choice," was intended to help better manage industrial energy costs by having GMP enter into wholesale energy purchases and sales at the customer's direction. However, for a variety of reasons, the program does not provide direct control and does not suit our overall goals and needs.

In 2014, in the context of a proceeding for approval of a rate decrease and alternative regulation plan by GMP, IBM negotiated a memorandum of understanding with GMP and other parties to the docket freezing the rate for the transmission class for a period of three years, and exempting IBM from power cost and storm adjustors. (See Order of 8/25/2014 in Docket Nos. 8190/8191).

Subsequently, as the term of that Order came to an end, GLOBALFOUNDRIES intervened in a series of proceedings, including two GMP rate cases and a rate design proceeding (among others), to attempt to extend its exemption from the adjustors and secure other relief from rate increases. (See Dockets No. 17-3232-PET, 17-3112-INV, 18-0974-TF, 18-1633-PET, 18-2850-TF.)

In 2018, GLOBALFOUNDRIES and GMP ultimately negotiated a term contract that would fix the transmission tariff at an agreed-upon rate through September 30, 2022, exempt GLOBALFOUNDRIES from certain adjustors, and provide an incentive to GLOBALFOUNDRIES to develop new and curtailable loads. The contract was approved by the Commission on December 31, 2018, Docket No. 18-3160-PET. In entering into the term contract, GLOBALFOUNDRIES and GMP also committed to engage in a "collaborative process to investigate and develop alternative rate structures or programs that would provide tools to retain or grow commercial and industrial load, bolstering both contributions to GMP's overall cost of service and the Vermont economy, including commercial and industrial dispatchable (also known as interruptible or curtailable) load which would help lower overall energy costs for Vermont residents and businesses."

Q23. Did GLOBALFOUNDRIES view the 2018 term contract as a long-term solution to its concerns with the cost of electricity for its Vermont facility?

A23. No. We view the three-year term contract as a temporary measure to mitigate the impact of power costs and provide a bridge to a longer-term, more comprehensive solution; it does not provide the relief necessary to provide direct control that may

allow us to reduce the competitive disadvantage facing the Vermont plant. Moreover, the serial negotiation of special contracts with GMP is not a reliable, predictable, or sustainable solution to GLOBALFOUNDRIES' challenges. Among other things, the lack of certainty and control over our power supply inhibits us from engaging in longer term investments. This was precisely the reason that GLOBALFOUNDRIES and GMP included in the term contract a commitment to a collaborative process to explore options for a more comprehensive and durable solution to GLOBALFOUNDRIES' power supply issues.

The 2019 Collaborative Process

Q24. Please describe how the collaborative process described in the 2018 term contract proceeded.

A24. GMP and GLOBALFOUNDRIES worked throughout 2019 to carry out the charge described in the term contact, and continued that work in 2020. A broad team of people from both GLOBALFOUNDRIES and GMP assisted, versed in power supply procurement, facilities, regulation, and finance.

Q25. What general areas of inquiry did the collaborative process address?

A25. We covered a number of distinct topics. First, we shared information on the nature of GLOBALFOUNDRIES' business and its unique characteristics and power requirements. Second, we engaged in an in-depth exploration of the components driving the power costs that GMP incurs and which in turn flow to GLOBALFOUNDRIES, including the factors shaping regional markets, transmission costs, and the impact of State policy. This close analysis of power

costs was central to our overall discussion, as the specific methods by which these costs emerge for GMP in the regional market and the considerations driving these costs into the future could impact the development of alternative rate structures and other methods GMP or the State might use to address the challenges facing other commercial and industrial customers such as GLOBALFOUNDRIES.

Third, we spent considerable time reviewing and analyzing possible programs to further address GLOBALFOUNDRIES' power costs, both in relative terms versus GMP's portfolio supply cost trajectory, and in absolute terms versus GLOBALFOUNDRIES' current bill. In so doing, we evaluated both qualitative and quantitative aspects of each alternative, considering upfront costs and ongoing costs (administrative costs, regulatory costs, policy mandates, etc.). We also considered how such alternatives would be implemented and approvals required.

Q26. What specific alternatives did GMP and GLOBALFOUNDRIES explore to address GLOBALFOUNDRIES' power supply and control costs?

A26. We explored a number of options. First, we looked at further load management and efficiency measures, examining in particular retail tariff programs utilized by other commercial and industrial customers. Unfortunately, we concluded that load control programs used successfully by other customers were unlikely to yield any significant benefit to GLOBALFOUNDRIES given its flat overall load and need for uninterrupted, consistent service. Second—and relatedly—we looked at the feasibility of on-site storage technology that might allow GLOBALFOUNDRIES to realize the benefits of reduced grid consumption and

load control without impacting the manufacturing process. The upfront capital costs and physical size of the system necessary to make a meaningful impact made this option unattractive.

Third, we looked at ways to bring additional commercial or industrial customers onto GLOBALFOUNDRIES' campus, thereby possibly increasing overall load but also providing additional opportunities for controlled load. The 2018 term contract provided incentives for GLOBALFOUNDRIES to do just that; however, while GLOBALFOUNDRIES completed the sale of a portion of its business to another company and also saw some other tenancy changes onsite in 2019, these changes did not yield a significant difference in overall load.

Fourth, we discussed the possibility of on-site generation, an option to which GLOBALFOUNDRIES has devoted considerable attention. Due to the overall site requirements for heating, cooling, and electricity, there is potential for a Combined Heat and Power facility that could provide greater efficiency in overall energy delivery at the site and lead to cost savings. As GLOBALFOUNDRIES has deployed a Combined Heat and Power facility at its Dresden site, we were able to conduct an informed review of the cost-effectiveness of doing so at the Vermont site. We concluded that the high capital cost of implementing this type of solution would involve carrying costs that would limit the potential to create savings in the near-term. In addition, given the load size (up to 60MW) and manufacturing requirements, we would not be able to fully "disconnect" from the grid through such a facility, thereby limiting the overall cost savings. Permitting such a facility could also pose significant

challenges, particularly because the only viable fuel for such a large, baseload Combined Heat and Power facility would be natural gas, the expansion of which for generation purposes is disfavored by Vermont's overall climate and energy policies.

Finally, we explored various means by which GLOBALFOUNDRIES could become a direct or indirect market participant in the ISO New England ("ISO-NE") wholesale market.

Q27. Please briefly describe the options you evaluated for participation in the wholesale electricity market.

A27. We examined several different approaches. One option was to "index" the contract to the market: take the basic structure of the current term contract and modify it to include a "market following" component that would allow GLOBALFOUNDRIES to potentially capture any beneficial changes in power costs during its term (and also pay for any negative changes). However, this would not offer any significant opportunity to directly control and potentially meaningfully lower GLOBALFOUNDRIES' costs from its current level, particularly as regional and state policy choices continue to drive costs.

Another possibility discussed was to implement a version of "Virtual Choice," allowing GLOBALFOUNDRIES to direct GMP's procurement of power to meet its needs, with the goal that GMP would eventually no longer include GLOBALFOUNDRIES' load in its supply portfolio or overall load obligations. This approach would likely involve GMP establishing a new Rate 70 tariff or special contract that is a formula rate designed to pass through market

costs at wholesale prices, and to pay directly for GLOBALFOUNDRIES' load, for ISO-NE energy spot prices (day-ahead and/or real-time), Forward Capacity Auction capacity prices, other ISO-NE and Regional Transmission costs, and Vermont renewable policy compliance (e.g., RES). GLOBALFOUNDRIES would expect this mechanism to allow some measure of control to potentially reduce its supply prices overall and execute its own hedging strategy. However, this option would require continued term contracts or tariff reviews without any permanent structural change, and it would pose ongoing challenges in negotiating the portion of GMP's overall costs that should be borne by GLOBALFOUNDRIES.

The other major option discussed was formation of an actual single-customer utility or a "virtual utility," given GLOBALFOUNDRIES' unique transmission-level customer position, distribution system expertise, confined industrial campus, and high load level. There is some precedent for this model; a Vermont Marble/OMYA utility existed in Vermont until 2011, although that utility also included limited residential customers and generation assets that complicated its operations and obligations compared to that which a "single customer" utility might experience. The advantages of a utility model would be total self-determination compared to treatment as a utility customer, and structural, permanent policy change reflective of GLOBALFOUNDRIES' unique status; the disadvantages would include the need to find an efficient way to manage certain inherent utility obligations that could not be avoided (such as FERC reporting).

Finally, we also briefly explored a handful of other options, such as having the State serve as purchasing agent for GLOBALFOUNDRIES' load. None of these emerged as a realistic alternative, and thus these were not a major focus of the discussions.

Q28. Are the findings of the collaborative process summarized in writing anywhere?

A28. Yes, GLOBALFOUNDRIES and GMP prepared a joint report detailing the collaborative process and the 2019 results of the process. It was submitted on December 31, 2019 in Docket No. 18-3160.

Q29. Following the collaborative process with GMP in 2019, did GLOBALFOUNDRIES reach any conclusions in 2020 about the options for managing its electricity procurement in Vermont?

A29. Yes. Having comprehensively examined and evaluated the options for meeting its electricity needs in conjunction with GMP, GLOBALFOUNDRIES concluded that forming its own, single-customer utility (the "Self-Managed Utility") offers the best chance of meeting GLOBALFOUNDRIES' goals and maintaining or expanding operations at its Vermont plant.

Q30. Why does GLOBALFOUNDRIES believe that the Self-Managed Utility Structure will meet its needs?

A30. Obtaining direct access to wholesale markets would enable GLOBALFOUNDRIES to respond to market price signals about the value of electricity in line with its own business goals, using timelines and strategies appropriate for its own unique system and global operations, and allow the

company to manage risk in a consistent manner across its plants. GLOBALFOUNDRIES is a uniquely situated electricity consumer in Vermont, given its large, stable load, direct connection to the transmission grid, internal distribution infrastructure, and the fact that its owners are invested in energy markets worldwide and understand power markets. GLOBALFOUNDRIES is cognizant of and able to take on both upside and downside risk from market exposure.

The Proposed Self-Managed Utility and Related Agreements

Q31. Please provide a summary of the proposed Self-Managed Utility.

A31. The Self-Managed Utility will be a division of GLOBALFOUNDRIES U.S. 2 LLC named "GF Power Division," with GLOBALFOUNDRIES as its sole "customer." The Self-Managed Utility will not have retail customers or engage in the sale of electricity to the public. Instead, GLOBALFOUNDRIES U.S. 2 LLC will procure and provide electricity only to itself.

Q32. Please describe how the GF Power Division will be administered.

A32. The GF Power Division will have three program managers working together to coordinate its operations and reporting up through GLOBALFOUNDRIES' Vice President and General Manager of the Vermont Facility. To begin with, the GF Power Division will have a Facilities Program Manager responsible for overseeing engineering, operations, and maintenance of the electrical system at the Essex Facility, including capital infrastructure upgrades and end-of-life replacement, overseeing energy efficiency projects and the Self-Managed Utility's renewable strategy, and helping to oversee the Self-Managed Utility's

power supply purchase. Primary responsibility for power supply purchase will fall to a Procurement Program Manager, who will oversee market participation, power procurement, power market forecasting, and payment of transmission fees (along with the transition fees discussed further below). Finally, the GF Power division will employ a Legal Program Manager charged with ensuring regulatory compliance and reporting to FERC, ISO New England, and the State of Vermont.

Q33. How will the Self-Managed Utility procure power for GLOBALFOUNDRIES?

A33. For the first four years of the Self-Managed Utility's operation, GMP will supply wholesale energy, capacity, renewable energy credits, and ancillary services to the Self-Managed Utility pursuant to a power purchase agreement. Thereafter, the Self-Managed Utility will designate an administrator (either its internal Procurement Program Manager, or a third-party administrator engaged by and reporting to the Procurement Program Manager) (the "Administrator") to procure power at market prices established through third-party solicitations of service such as multi-year Fixed-Price-Full-Requirements or Hourly Price Service products.

Q34. Will any changes be necessary to separate GLOBALFOUNDRIES' facility from GMP service?

A34. Yes. First, GLOBALFOUNDRIES' Essex Campus will need to be removed from GMP's service territory. Only GLOBALFOUNDRIES' Williston Campus will remain in GMP's service territory, as it will not be served by the Self-Managed

Utility. GMP is petitioning the Commission to adjust GMP's service territory to exclude the Essex Campus.

Second, in connection with establishing the Self-Managed Utility, several transmission facilities would be transferred between GLOBALFOUNDRIES, GMP, and Vermont Transco LLC ("VTransco"). These include:

- the transfer to GMP of certain GLOBALFOUNDRIES-owned facilities that connect to GMP known as the Williston Substation, including two 115/13.8kV 37MVA Power Transformers, a lineup of 13.8kV switchgear with two transformer breakers and six feeder breakers, miscellaneous 115kV and 13.8kV equipment including the substation switchgear building, and all associated equipment with the substation fenced area including insulators, instrument transformers and lightning arrestors, station AC service and DC battery supplies, and miscellaneous equipment including relaying, control, monitoring and metering;
- the transfer to GLOBALFOUNDRIES of certain GMP-owned facilities known as Substation 86 that connect to GLOBALFOUNDRIES, including Four 115kV Circuit Switchers; and
- the transfer to VTransco of GMP-owned facilities at Substations 86 and 87 that are necessary to connect GLOBALFOUNDRIES directly to VTransco's system, including but not limited to two 115kV Oil Breakers, eleven 115kV Switches, miscellaneous

115kV equipment including the Control and Metering Building, insulators, instrument transformers and lightning arrestors, miscellaneous other equipment including relaying, control, monitoring and metering cabinets, and 115kV Transmission Lines (1591, 1592, 1593, and 1594 Lines).

Q35. How will the Self-Managed Utility maintain the transmission and distribution infrastructure necessary to supply power to the Essex Facility?

A35. For decades, GLOBALFOUNDRIES and its predecessor IBM have maintained an internal distribution system at the Essex Facility and step-down transformers connecting the facility to transmission service, employing facilities staff and outside contractors with deep experience in operating and maintaining electric power systems. The establishment of the Self-Managed Utility is not expected to result in any material change in the nature or extent of GLOBALFOUNDRIES' maintenance operations. As discussed above, those maintenance obligations will fall within the responsibility of the Facilities Program Manager for the GF Power Division. The electrical system is critical to GLOBALFOUNDRIES' manufacturing activities, and thus maintaining it to ensure present and future reliability is a high priority for us.

Q36. Will GLOBALFOUNDRIES continue investing in energy efficiency initiatives if the Self-Managed Utility is approved?

A36. Absolutely. As I note above, GLOBALFOUNDRIES and IBM have aggressively pursued demand reduction initiatives over the past several decades, and GLOBALFOUNDRIES will continue to do so whether or not the Self-Managed

Utility is approved. GLOBALFOUNDRIES' corporate policies set out goals for reducing electricity consumption and greenhouse gas emissions that all of its facilities must meet (with a new set of goals to be announced later this year), and, regardless, demand reduction makes good business sense.

If the Commission approves the Petition, GLOBALFOUNDRIES will continue participation in the Self-Managed Energy Efficiency Program ("SMEEP") through 2022. The SMEEP has been a pillar of GLOBALFOUNDRIES' efficiency initiatives in Vermont: IBM became the first participant in SMEEP in 2009, and GLOBALFOUNDRIES has continued participation in the program since acquiring IBM's Vermont facilities. Since GLOBALFOUNDRIES took over in 2015, it has made over $7 million in energy efficiency investments to save over 12.3 million kilowatt hours of electricity.

As the statute governing SMEEP is currently written, the program is only available to members of the "transmission or industrial rate classes." GLOBALFOUNDRIES would cease to be a member of the transmission rate class upon commencing operation of the Self-Managed Utility, and thus GLOBALFOUNDRIES' participation in the SMEEP would officially terminate as of October 1, 2022. However, GLOBALFOUNDRIES intends to file a plan in January 2022 for the SMEEP cycle running from 2022 through 2025 for approximately $1 million in investments each year (as under the current SMEEP program) and would execute on its commitments under the plan during that cycle and make annual reports to the Commission as it did under the SMEEP.

Over the next two years, GLOBALFOUNDRIES will evaluate potential further efficiency investments as well as demand reduction opportunities that the Self-Managed Utility structure may present. By April 1, 2024, GLOBALFOUNDRIES will file a report with the Commission detailing its future plans for energy efficiency investments and demand reduction measures following completion of the 2022-2025 SMEEP cycle. GLOBALFOUNDRIES expects that report will incorporate a plan for future, ongoing reporting on energy efficiency investments to the Commission on a regular schedule.

Q37. How will GLOBALFOUNDRIES arrange for and contribute to the cost of transmission?

A37. GLOBALFOUNDRIES and GMP have entered into a memorandum of understanding with the Vermont Electric Power Company ("VELCO"), for itself and VTransco, establishing VTransco as the serving entity for transmission of electricity to the Self-Managed Utility (the "Transmission MOU"). A copy of that agreement can be found at Exhibit GF-GR-2.[4]

As set forth in the Transmission MOU, GLOBALFOUNDRIES will receive Local Network Service as a customer of VTransco under its existing Schedule 21-VTransco of the ISO-New England Open Access Transmission Tariff. GLOBALFOUNDRIES will be responsible for paying directly to ISO New England GLOBALFOUNDRIES' share of all ISO New England Tariff costs

[4]The one-line diagrams provided as Exh. MOU-6 & 7 contain a confidential label in the original document, but since execution of the MOU the parties have confirmed the exhibits do not contain Critical Energy Infrastructure Information (CEII) or other confidential information and therefore they do not seek confidential treatment of either exhibit.

allocated to the regional network load, known as the Regional Network Service costs.

Q38. Does the Transmission MOU address the potential increase in transmission costs that may be borne by Vermont's distribution utilities as result of GLOBALFOUNDRIES' exit from GMP service?

A38. Yes, the agreement seeks to offset any such transmission costs that might be shifted to Vermont's distribution utilities.

Q39. How does the Transmission MOU accomplish this?

A39. It does so in two ways. First, the Transmission MOU would require GLOBALFOUNDRIES to pay directly to VTransco the Local Network Service charges allocated to its load. Second, the Transmission MOU provides for a series of four annual payments by GLOBALFOUNDRIES between 2022 and 2026, which would be paid to and held by VELCO, in the amount of $250,000 in 2023, $200,000 in 2024, $150,000 in 2025, and $100,000 in 2026. These payments are intended to help compensate for any shortfall to Vermont distribution utilities (other than GMP) (the "Other VDUs") that is the difference in (i) the Other VDUs' pro-rata share of the 1991 Vermont Transmission Agreement ("VTA") costs if GLOBALFOUNDRIES' load had been retained by GMP and (ii) the Other VDUs' pro-rata share of the actual VTA costs with GLOBALFOUNDRIES as a Schedule 21-VTransco customer. To be clear, the payments are contingent on the Commission approving the terms and conditions of the Transmission MOU, as they have been incorporated into GLOBALFOUNDRIES' Petition.

Q40. How, if at all, will GLOBALFOUNDRIES' departure from GMP service impact Vermont ratepayers generally?

A40. As discussed above, the agreement with VELCO and GMP is intended to keep all Vermont distribution utilities as financially whole as reasonably possible compared to the status quo with respect to transmission costs by providing for GLOBALFOUNDRIES' payment of transmission costs that would otherwise shift to the Vermont distribution utilities due to GLOBALFOUNDRIES transitioning from GMP's load. To the extent these payments remain the same as GLOBALFOUNDRIES' current contribution toward transmission costs as a GMP customer, the Vermont distribution utilities and their customers would not be impacted by GLOBALFOUNDRIES' shift to a Self-Managed Utility.

Q41. What is GLOBALFOUNDRIES' current contribution toward VELCO's transmission costs?

A41. We estimate the GLOBALFOUNDRIES annual contribution toward VELCO's transmission costs is $2.6 million. This contribution would go away if GLOBALFOUNDRIES were to leave the state. Under the Self-Managed Utility model, these annual contributions to VELCO's net revenue requirement would continue as long as the company continues to operate its facility in Vermont. Importantly, by keeping GLOBALFOUNDRIES' operations in Vermont, VELCO avoids the need to collect this annual amount from the customers of other utilities throughout the state.

Q42. Will GLOBALFOUNDRIES' departure from GMP service impact other GMP customers?

A42. Yes, though—as discussed below—we have agreed to a structure that is designed to mitigate those costs. When it leaves GMP service, GLOBALFOUNDRIES will no longer contribute to GMP's overall costs, which will shift to other GMP customers. Throughout our discussions, GMP has been acutely focused on the impact to its other customers, and GMP and GLOBALFOUNDRIES have agreed to steps to mitigate the impact of GLOBALFOUNDRIES' departure.

Q43. How do GLOBALFOUNDRIES and GMP propose to mitigate the impact to other GMP customers?

A43. As I have described, GLOBALFOUNDRIES, GMP, and VELCO have reached agreement to maintain GLOBALFOUNDRIES' contribution to transmission costs. Additionally, GMP and GLOBALFOUNDRIES have negotiated a four-year transition fee, totaling $15.6 million, that is intended in part to cover a portion of costs GLOBALFOUNDRIES would otherwise continue to pay to GMP if it were to remain a customer, thereby benefiting GMP's other customers during that period. The fee would be paid in monthly installments and would gradually phase out during the transition period, as follows: $500,000 per month starting on October 1, 2022 ($6 million for GMP FY 2023), $416,667 per month starting on October 1, 2023 ($5 million for GMP FY 2024), $250,000 per month starting on October 1, 2024 ($3 million for GMP FY 2025), and $133,333 per month starting on October 1, 2025 ($1.6 million for GMP FY 2026).

Q44. Are there any other benefits to GMP's customers from GLOBALFOUNDRIES' formation of a Self-Managed Utility?

A44. Yes. To start with, it will reduce the portfolio risk for GMP associated with purchasing future power supply. GLOBALFOUNDRIES' Essex Facility presently makes up a substantial piece of GMP's load; if GLOBALFOUNDRIES were to shutter its operations in Vermont, GMP and its customers could end up bearing the cost of excess supply purchased with the expectation of serving GLOBALFOUNDRIES into the future. GLOBALFOUNDRIES' transition to a Self-Managed Utility will also allow the benefit of equity in earnings from GMP's stake in VTransco to shift entirely to non-GLOBALFOUNDRIES customers of GMP.

Q45. What will happen if GLOBALFOUNDRIES or its Vermont facility are sold, merge with another entity, or if there is otherwise a voluntary transfer of control after the Self-Managed Utility is formed?

A45. We have agreed that GLOBALFOUNDRIES shall require any successor of GLOBALFOUNDRIES U.S. 2 LLC to assume all obligations of GLOBALFOUNDRIES U.S. 2 LLC's agreements with GMP and VELCO, any conditions imposed by the Commission and FERC, and any other applicable regulatory requirements of the Self-Managed Utility; and that, in the event any successor or assign fails to assume all such obligations, the Self-Managed Utility territory will revert to GMP, to be treated within GMP's then-applicable tariffs.

Q46. If the Self-Managed Utility is approved, how, if at all, would Vermont's Renewable Energy Standard apply to the Self-Managed Utility?

A46. The Self-Managed Utility would not be subject to the requirements of Chapter 89 of Title 30, including the Renewable Energy Standard ("RES"), because we are

committed to not "engage[] in the distribution or sale of electricity directly to the public." *See* 30 V.S.A. § 8002(23).

Q47. What are GLOBALFOUNDRIES' plans with respect to purchasing renewable energy if the Self-Managed Utility is approved?

A47. There is no question that renewable energy will make up a substantial portion of GLOBALFOUNDRIES' power supply portfolio. Indeed, the Vermont facility has a history of supporting renewable energy: it partnered with Sandia to support photovoltaic development research, establishing a PV regional test center from 2013 to 2019,[5] and in 2016 GLOBALFOUNDRIES transferred unused land to GMP to develop a 4.7 MW solar generation facility (the state's largest at the time).

That commitment to renewable energy will continue. Not only do GLOBALFOUNDRIES' corporate policies call for substantial reductions in greenhouse gas emissions, but customers also increasingly favor renewable energy, with some customers in the semiconductor industry requiring that increasing portions of manufacturers' power supplies are renewably sourced and that there are increasing greenhouse gas reduction goals. For the initial four-year period, as discussed above, GLOBALFOUNDRIES will procure power through a power purchase agreement with GMP, and its power supply portfolio will maintain the characteristics of the GMP portfolio as a whole, including GMP's compliance with Vermont's Renewable Energy Standard. During that four-year transition period, GLOBALFOUNDRIES will develop a power procurement plan

[5] This site is still in service with 80 kw of connected panels.

to help meet its internal goals and market requirements to further reduce the carbon footprint of its operations.

This will provide GLOBALFOUNDRIES five years from the present to evaluate market developments, explore opportunities to source renewable energy, and develop and implement a clean power procurement plan. The goal will be to create a cost-competitive power procurement strategy that aligns with expectations of key stakeholders, including those of GLOBALFOUNDRIES' customers and Vermont's regulators. During this process, GLOBALFOUNDRIES will provide periodic reports to the Commission and DPS on its progress to meet these challenges. On or before January 1, 2026, GLOBALFOUNDRIES U.S. 2 LLC will provide a formal report to the Commission on its clean power procurement plans. GLOBALFOUNDRIES will report to the Commission on its power procurement plans going forward and the expected renewable energy attributes of its power supply portfolio.

Q48. If the Commission does not approve the Self-Managed Utility, what are GLOBALFOUNDRIES' alternatives?

A48. GLOBALFOUNDRIES has spent a considerable period of time studying available options and believes the Self-Managed Utility to be the only feasible, long-term solution to the persistent competitive deficit posed to its Vermont operations by high electricity costs. We have undertaken this work because we see it as mission critical; finding a way to directly manage our energy costs is key to our long-term ability to stay in Vermont. If the Self-Managed Utility is not approved, there is a significant likelihood that GLOBALFOUNDRIES will have

no choice but to shift its operations to more competitively advantageous sites outside of Vermont.

Q49. Are there any timing considerations associated with review and potential approval of the Petition?

A49. Yes, time is of the essence for GLOBALFOUNDRIES in obtaining confirmation from the Commission as to whether it will be able to proceed with establishing the Self-Managed Utility. GLOBALFOUNDRIES is in the midst of making investment decisions for the next fiscal cycle, and receiving a decision from the Commission by November 15, 2021 is critical to those decisions. Certainty on the future of its energy costs will allow the Essex Facility to be competitive in those internal investment decisions. GLOBALFOUNDRIES also understands that time is of the essence for GMP as well as it formulates its next Integrated Resource Plan and rate petition.

GLOBALFOUNDRIES certainly understands that the Commission has many important, time-sensitive matters before it, and appreciates the Commission's time and consideration in reviewing and acting on the Petition.

Q50. Does this conclude your testimony?

A50. Yes, it does.