EXHIBIT NO. ___(IP-5)
DOCKET UE-161123
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WITNESS: IRENE PLENEFISCH

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket No. UE-161123**

EXHIBIT NO.____(IP-5)

SECOND EXHIBIT TO THE
SUPPLEMENTAL PREFILED DIRECT TESTIMONY
OF IRENE PLENEFISCH
ON BEHALF
OF MICROSOFT CORPORATION

DECEMBER 15, 2016

Greener datacenters for a brighter future: Microsoft's commitment to renewable energy

Posted May 19, 2016 by Brad Smith - President and Chief Legal Officer

As the world increasingly races to a future based on cloud computing, a host of new and important public issues are emerging. One of these issues involves the energy and sustainability practices of the datacenters that power the cloud. Over the past year we've spent considerable time focusing on our work in this area at Microsoft, and I wanted to share today where we're heading.

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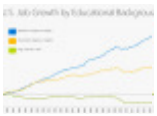

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When it comes to sustainability, we've made important progress as a company since the start of this decade, but even more important work lies ahead. Across the tech sector we need to recognize that datacenters will rank by the middle of the next decade among the large users of electrical power on the planet. We need to keep working on a sustained basis to build and operate greener datacenters that will serve the world well.

For Microsoft, this means moving beyond datacenters that are already 100 percent carbon neutral to also having those datacenters rely on a larger percentage of wind, solar and hydropower electricity over time. Today roughly 44 percent of the electricity used by our datacenters comes from these sources. Our goal is to pass the 50 percent milestone by the end of 2018, top 60 percent early in the next decade, and then to keep improving from there.

Especially given the magnitude of datacenter expansion that will continue throughout this time period, this is not a small goal. It requires that we understand where we've come from over the past few years and take a principled approach to our work in the future. We need to translate these principles into clear and concrete goals that we can use to hold ourselves accountable in a responsible way. And it will require work with many other important stakeholders and institutions, from environmental groups to utilities to governments themselves.

Important work to date

Our focus on sustainability is not new. We've been tracking and reducing emissions since 2007, and we've been operating our datacenters and the rest of the company at 100 percent carbon neutrality since 2012. We've achieved this progress by driving efficiencies, charging our business units a fee on carbon, and investing in sustainable energy projects and technologies. When we're not able to eliminate our energy use or directly power our operations with green energy, we purchase

renewable energy certificates to reduce carbon emissions. When we include the use of these certificates, 100 percent of our consumption has been powered by renewable energy since 2014.

Microsoft was in fact one of the first large enterprises to implement a global internal carbon fee model, charging each business unit a fee based on the carbon emissions of its business operations. This provides a powerful incentive to find carbon-saving alternatives and invest in carbon-reducing innovations. Thanks in part to this program, Microsoft was ranked by the U.S. Environmental Protection Agency as the second largest user of green power in the United States. Earlier this year we were honored to receive an EPA Climate Leadership Award and to be recognized by the United Nations and World Economic Forum for our carbon fee model.

As part of our commitment to carbon neutrality, we also offset the carbon impact of our air travel. We do this by investing in community projects that focus on issues such as clean cookstoves, habitat protection and restoration, and solar power and lighting – impacting more than 7 million people worldwide.

As a result of this work, we've reduced carbon emissions by 9.5 million metric tons, purchased 14 billion kilowatt hours of green energy, and cut energy consumption by 10 percent at our 125-building main campus in Redmond, Washington. All of this represents important progress and creates a strong foundation on which to build.

A principled approach to the future

While we're proud of our progress, we readily recognize that even bigger steps will be needed in the future. In part this is because of the unique and increasingly important role that datacenters will play in the decades ahead.

Over the past 250 years a few select inventions have served as the fundamental catalysts for human progress.

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Microsoft by the Numbers Snaps

In the First Industrial Revolution that began in the latter 1700's, steam and the steam engine played this role. A century later, the Second Industrial Revolution was based on electricity and electrical power plants, and then gasoline and the combustion engine. The Third Industrial Revolution relied on the microprocessor. The Fourth Industrial Revolution we're now entering will feature major technology advances in physical materials, biological processes and digital technologies. But the fundamental cornerstones for all of these advances will be data – the electricity of our age – and the datacenters that will make this massive use of data possible.

Datacenters have become the engine of transformation. The good news is that public cloud datacenters operated by companies like Microsoft are more energy efficient than the private server facilities run by individual companies or governments. This is natural, given the degree to which this has become a core competency, and it reflects our focus on both world-leading R&D and large capital investments to drive datacenter energy efficiency.

But there is no room for complacency. The largest tech companies today may each consume as much electrical power as a small American state. There may come a point in just a few decades when we each may consume as much power as a mid-sized nation. This creates an obvious responsibility that we need to take seriously.

To help us live up to this responsibility, we have established three principles to guide our environmental sustainability work:

Transparency. We're committed to the type of transparency that will hold ourselves accountable and share our track record with the public. We'll report annually our total energy consumption and consumption across regions, the mix of sources for the power that we use, the impact of our internal carbon fee model and the investments we make. We also will be transparent about where we are investing in renewable energy certificates or

international equivalents, and our investments in carbon offset projects around the world.

Help to accelerate the transition to a clean energy infrastructure. We're committed to using more clean energy every year. We will be mindful about siting datacenters and other facilities where renewable energy sources are readily available or can be made available during ramp-up or operational phases. Wherever we operate, we will work to bring new renewable energy sources online either through investments in new projects, by engaging on enabling policy changes that will help accelerate availability of more clean energy, and by working with utilities to increase the availability of renewable energy on the grid.

Investments in research. Finally, we're committed to cutting-edge research and development investments to advance our energy responsibilities. We will continue, in particular, to focus on R&D that will lead to further improvements in the efficiency of computing infrastructure, datacenters, servers and software performance. We will also work to advance sustainability through the products, platforms, and capabilities we use to run our business and offer our customers and partners, and we will invest in new technologies that have the capability to create more clean energy at scale.

Practical energy commitments

We recognize the importance of translating these principles into action. We've concluded that this requires that we make to ourselves and to the public five clear and concrete commitments:

1. **Improving our energy mix.** First, we need to focus on our datacenters' sourcing of electricity. Today, although 100 percent of the electricity used by our datacenters is renewable based on a mixture of direct projects and renewable energy certificates (or the equivalent), only about 44 percent of that power is generated by wind, solar

and hydropower sources. Some of that electricity comes from projects where Microsoft directly procures renewable energy, such as the Keechi wind farm in Texas and the Pilot Hill wind farm in Illinois, while the rest is supplied by wind, solar and hydropower sources on the grid. But this means that we have a large opportunity to address the remaining 56 percent either with our own direct purchases or by encouraging the addition of new wind, solar, or hydropower additions to the grid.

We recognize that both the volume and percent of energy from these renewable sources needs to be higher. As we move forward, we will continue to purchase renewable energy certificates to ensure we reduce our carbon emissions to zero. But more important, we are setting goals to grow the percent of wind, solar, and hydropower energy we purchase directly and through the grid to 50 percent by 2018, 60 percent early in the next decade, and to an ongoing and higher percentage in future years beyond that. As we make progress, we'll report on it and share how we're thinking about our next milestone on this path.

2. **Maintaining carbon neutrality.** Through investments in energy efficiency, direct purchases of renewable energy, renewable energy certificates or the equivalent, and carbon offsets, we will continue to be 100 percent carbon neutral in our operations and business air travel.

3. **Retiring all green attributes from projects in which we invest.** Any time we purchase green energy, we will not sell the renewable energy certificates or any other green "attributes" for others to claim.

4. **Investing in new energy technologies.** We will continue to invest in new energy technology, such as our biogas and fuel cell work, that have the potential to accelerate the availability of new types of energy and drive new efficiencies.

5. **Supporting public policies that help enable new renewable energy sources.** Finally, we will support public policies that accelerate the availability of additional renewable energy in markets where we operate. We believe this is an imperative not only for our ability to meet our own commitments, but for the energy improvements that are needed by the tech sector more broadly.

Toward a broader conversation about a sustainable future

The more we've focused on these issues, the more apparent it has become that the world needs an ever-broadening conversation to make sustained progress. Much has been accomplished in this regard in recent years, including a new global commitment to address these issues. But we'll all need to work together to translate this into the types of practical steps that are needed.

We definitely learned a lot earlier this year about the types of practical steps that can make a difference. Microsoft joined an innovative public-private partnership with Dominion Power and the State of Virginia to do just that. Dominion will build a 20-megawatt solar energy plant to bring new, additional clean energy to the grid in Virginia, and Microsoft helped fund it and will claim and retire the green attributes. Partnering with utilities and governments in these types of ways can impact the grid beyond our own operational needs and can help accelerate the transition to a cleaner energy economy.

The progress that's needed will not come easily. The issues are complex and the steps that are needed are varied. Real progress will require that groups across the non-governmental, business and governmental communities find new ways to work together.

At Microsoft, our mission is to empower every person and every organization on the planet to achieve more. In a

world of more than 7 billion people, this plainly comes with a responsibility to advance sustainability in our operations, including datacenters, to deliver innovative solutions that will help address the environmental challenges and opportunities that lie ahead.

About the Author

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Brad Smith is Microsoft's president and chief legal officer. Smith plays a key role in representing the company externally and in leading the company's work on a number of critical issues including privacy, security, accessibility, environmental sustainability and digital inclusion, among others.

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