Schneider Electric North America

Boston, Massachusetts

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IN SUPPORT OF “How Can We Better Communicate Weather to Enhance Commerce and Safety”

Before the **Senate Committee on Commerce, Science and Transportation on April 22, 2015**

Summary:

Public-private partnerships between commercial weather services and NOAA can improve weather forecasting in this country.

- There should be a better and more formal method to exchange knowledge and transfer technology between NOAA and commercial services.
- NOAA should place more emphasis on the use of existing datasets from commercial sources.
- NOAA should focus on its core competencies of weather modeling and issuance of weather warnings, and let commercial services focus on “down-stream” utilization of NOAA data into specialized solutions to solve end-user problems.

- As weather volatility increases, we believe that an increased investment is also necessary to help commercial applications more quickly reach their customers.

Chairman Thune, Ranking Member Nelson, I appreciate the opportunity to testify today on the opportunities that commercial weather services are able to deliver to improve weather forecasting and further the goals of NOAA, the National Oceanic and Atmospheric Administration.

My name is Ron Sznaider. I am the Senior Vice President of the Weather Division of Schneider Electric. I have been involved in commercial weather services functions for over 30 years. With me today is Jim Block, a colleague who is a Certified Consulting Meteorologist, as well as a Fellow of the American Meteorological Society.

Schneider Electric is a global Fortune 300 company with 170,000 employees world-wide, $30 billion in sales, and operations in more than 100 countries. Schneider Electric is a specialist in energy management offering integrated solutions across multiple market segments, including Commercial and Residential Buildings, Industrials & Machine Manufacturers, Utilities & Infrastructure, and Data Centers & Networks. We maintain the largest commercial business-to-business weather forecasting and consulting organization in the United States, with customers in all 50 states.

Our unique weather solution provides precision weather intelligence to our customers who include: the agriculture community, utilities, airports and airlines, professional and collegiate sporting organizations, transportation entities, emergency response providers, and local and state governments. We build relationships with our customers, with a distinct interaction that offers them information different from what you see in consumer apps on your smart phone. We enable decision makers with critical inputs to take quick and effective action to enhance safety and improve efficiencies. The unique technology we have developed improves weather forecasting and has been independently rated #1 in weather forecast accuracy eight years in a row.

Better weather forecasts can have a significant impact on the economy. An analysis by the National Center for Atmospheric Research shows that over 16 percent of the aggregate US economy is sensitive to weather on an annual basis. Additionally influence of routine weather variations on the economy could amount to as much as 3.4 percent of U.S. gross domestic product (GDP). Other research shows that one–third of the private industry activities, amounting to $3 billion, have some degree of weather and climate risk. Our customers are most certainly impacted by weather. For example, in the utility sector, over 75 percent of summertime power outages are weather related, and in the transportation sector about 25 percent of all accidents are connected to weather.

Our challenge, and opportunity, is to provide our nation with the best weather forecasting. We believe that closer cooperation between NOAA and commercial weather services can lead to a mutually beneficial partnership, and one that will benefit the science of weather forecasting, the taxpayers, and the communities who must address the weather challenges of today and tomorrow.

We see that NOAA's greatest strength lies in weather and ocean modeling. No commercial weather service is likely to match NOAA in its ability to create these types of sophisticated computer prediction models. We also believe that NOAA should remain the authoritative source for the issuance of severe weather warnings for major events such as hurricanes and tornadoes.

At Schneider Electric we utilize over 70 different sources of information to create our weather solutions, one of which is the NOAA open-data model. We then innovate and develop specialized technology to take the NOAA data and add value by fine-tuning it and aligning it to specific customer needs.

Following are a few examples of real solutions we offer our customers today:

Agriculture: We provide the weather information in the DTN and Progressive Farmer services. We recently deployed a network of almost 3,000 weather and soil sensors at

farms, to help farmers make better day-to-day crop production decisions. This intelligence could also be useful to NOAA for future tornado prediction models.

Utilities: We provide services to most large electric utilities such as Florida Power and Light, to predict demand changes relative to weather conditions, and also work with other utilities in what is called “mutual assistance” so they can share work crews for faster power restoration. We also help weather-enable the newest generation of Smart Grid solutions to further optimize the nation’s electrical grid.

Transportation: In the northern states we make road and pavement forecasts and provide specific guidance of what chemicals to use -- just enough to do the job so that it is both cost effective and environmentally conscious.

Aviation: In Aviation we provide specific forecasts for airlines, including a new turbulence forecast that can predict the location and the effect of turbulence by aircraft type (e.g. Boeing vs. Airbus). An independent laboratory found that our forecast was 20% more accurate with 70% fewer false positives than what the FAA currently uses. We believe there is an opportunity to take advantage of this private sector technology in the modernized airspace system envisioned by the FAA with NextGen.

Sports: Parts of the southern U.S., such as Florida, have some of the most lightning activity of anywhere in the world. We provide services to the PGA TOUR for lightning safety, along with weather safety information to 350 colleges and universities.

Public Safety: We also provide over 1,000 state and local public safety organizations with weather alerts and forecasts, for uses as varied as urban flooding to planning for severe heat spells.

Schneider Electric recently published a study in which we concluded that individual weather events are becoming more extreme. But the good news is that there is much that can be done to plan for this increased volatility.

As NOAA looks into the future of weather and the increased intensity of storms and events, cooperation with the private sector is even more essential.

We offer the following recommendations to drive public-private partnerships and help deliver the best results to communities and taxpayers:

1. There should be a better and more formal method to exchange knowledge and transfer technology between NOAA and commercial services.
    - NOAA should be supportive of the creation of working groups or advisory committees with the specialized commercial business-to-business weather companies. This group of private sector organizations has direct interaction with end-user business and community customers, and needs to be treated separately from the consumer facing weather service

providers. The focus should be on listening to feedback and recommendations from the commercial sector. An improved working dialog between these two groups that will help accelerate innovation in the private sector, and make better use of the NOAA models and data sets.

- There needs to be a better knowledge and technology transfer from NOAA to the commercial sector. If the private sector can have clear and easy access to NOAA's technology roadmap, they can plan ahead with their innovations and ultimately maximize the investment in NOAA's R&D, by bringing new solutions for American businesses and communities into operational service.
- NOAA should create a position responsible for interface and technology transfer between NOAA and private sector
- Quarterly meetings should be established between NOAA and qualified members of a commercial steering group to coordinate information exchange

2. NOAA should place more emphasis on the use of existing datasets from commercial sources.
    - If NOAA wants to become a world leader in environmental prediction models, then they should consider all available data sets that can be utilized to initialize their models – including data sets from the private sector. All too often use of new datasets are overlooked if not originated at NOAA, or some other public institution. This is certainly the case with

space-based remote sensing platforms, but also applies to surface datasets, such as the Agricultural Weather and Soil Network data put in place by Schneider Electric / DTN. In that example, in order for weather models to be most accurate, it is critical to know the most accurate soil temperature and the moisture fluxes from the soil. Improved weather forecasts for tornadoes, as well as weather prediction for agriculture and monitoring of drought, can be achieved by integration of data sources like this. Furthermore, environmental data from commercial sources can often be more cost-effective to acquire, and available much more quickly.

- A regular and formal meeting or forum between government and the private sector can make NOAA and other government agencies aware of datasets that have been developed by commercial services, with enough technical detail to allow for legitimate evaluation by government agencies. NOAA should provide honest and objective evaluation of these available data sets for potential use in their R&D.

3. NOAA should focus on its core competencies of weather modeling and issuance of public warnings of hazardous weather conditions, and let commercial services focus on “down-stream” utilization of NOAA data in their solutions to solve end-user problems.

    - The private sector is better positioned to innovate around an existing customer base that leverages many different services from a given company. This customer intimacy better positions private

sector companies to develop new and innovative solutions that are in best alignment with end-user needs. NOAA will not realistically be able to provide the same level of operational service that is expected, and will never have the breadth of offers (many non-weather related) that the private sector can provide into a given market segment.

- Private sector companies do not have the resources or bandwidth to develop and refine the numerical prediction modeling and datasets that NOAA does.
- Today, NOAA spends too much time and effort on the distribution and attempts to customize its products, at the expense of weather models and observation infrastructure that could ultimately enhance public safety. Encouraging NOAA to focus on its core competencies will ensure that commercial services can make the scientific and operational advances from NOAA translate better into effective solutions made available to businesses and consumers as quickly and as inexpensively as possible.
- Government agencies that utilize weather information in their internal processes should be required to review and assess feasibility of use of commercially developed solutions if/when superior results can be achieved. Example: Schneider Electric's new generation turbulence and aircraft icing solutions should be reviewed by the FAA for potential use in upgrading national

airspace safety. This solution could be further improved by full use/integration of NOAA modeling input.

- NOAA should acknowledge the commercial weather industry is a viable and critical component to extract value from NOAA R&D activities and bring them to the marketplace. NOAA should not create new decision-support solutions duplicitous to existing commercial offers, but instead should remain focused on improving upstream modeling and improving the accuracy of severe weather alerts.

4. As weather volatility increases we believe that an increased investment is necessary in helping commercial applications more quickly reach their customers.
    - NOAA should include commercial services in its research, planning and routine processes, and be willing to invest in measures such as frequent and routine meetings with the private sector to ensure that its R&D output is able to benefit the public as quickly as possible.
    - Grants and PPP projects into the private sector could accelerate investment in commercial services and spur new innovation.
    - Funding for commercial end-user innovation should be allocated, for specialized and qualified commercial weather companies to compete for, all leveraging and maximizing inputs from NOAA models.

- These actions recommended for knowledge and technology transfer require a very modest investment, but one that can pay enormous dividends for the American public in the form of better and faster alerts and warnings, and improved forecast accuracy.
- Innovation grants should be made available for commercial entities to compete, with purpose of maximizing leverage of NOAA data into superior end-user solutions in a coordinated way.

We understand that the House Science Committee passed legislation that deals with NOAA's interaction with commercial satellites (HR 1561). We hope that the Senate will also examine downstream use of NOAA data, and will focus on collaboration between NOAA and providers like us, who deliver product to the end-user.

We commend the committee for considering weather-related legislation, and thank you for the opportunity to speak to you today.