

Vermont Weather Analytics Center



VWAC Phase II - Operating Committee Agenda

Agenda
Subject
KPI Update
Schedule Update <ul style="list-style-type: none">• 2017 Work• 2018 Work
VELCO Update <ul style="list-style-type: none">• Strategic Agreement Summary• Track Updates• VWAC Workshop Summary

Utopus Insight Strategic KPI

Software Deliverables. “Deliver outputs of the Joint Development Agreement and Software License Agreement (used and useful products MaestrOS, Xplore Application, and Hypercast”

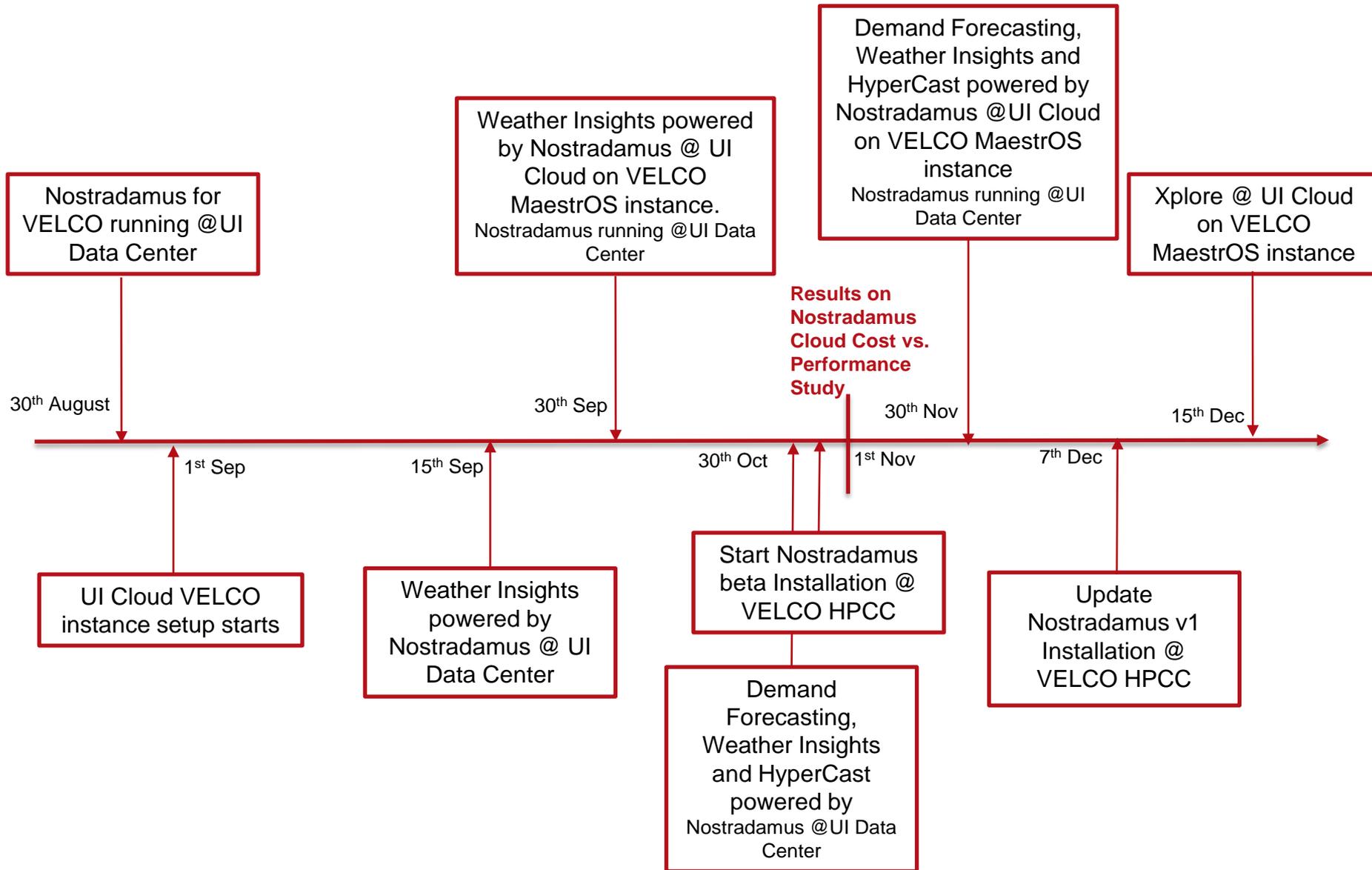
Threshold	Target	Distinguished
All JDA outputs timely delivered at price set under the JDA	Threshold achieved plus 1 of 3 software products from SLA delivered and accepted at contract price	All JDA and SLA outputs delivered and accepted at contracted price

Joint Development Agreement KPI

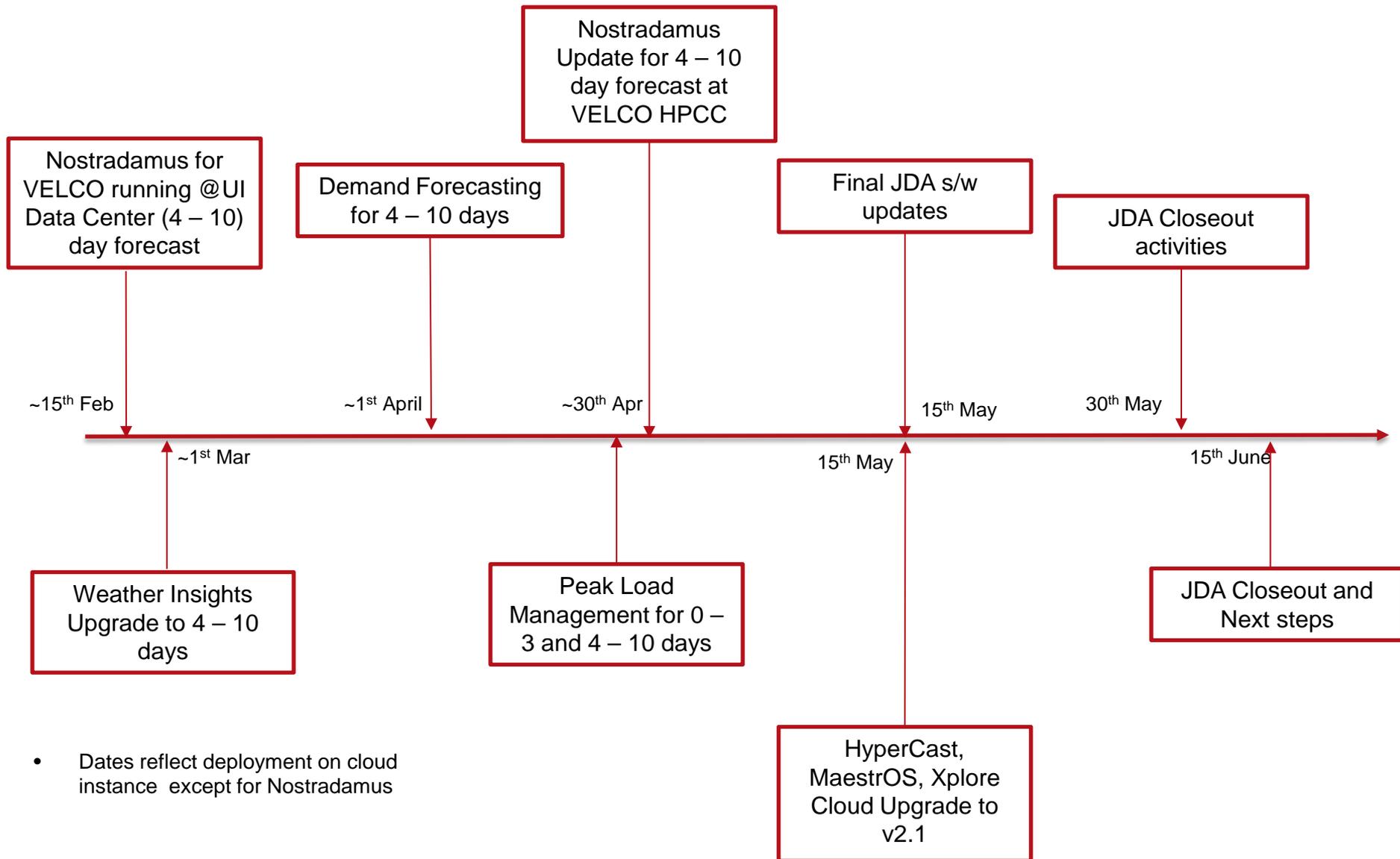
VWAC Specific-“Successfully integrate the output of the Vermont Weather Analytics Center (VWAC) into the VELCO Energy Management System (EMS) to improve accuracy of the predictive operating model. We will be successful when all three functions (integration of VWAC output into EMS, establishment of a strategic implementation plan to identify key areas of operational needs and the installation of the High Performance Computing Cluster is completed)”

Threshold	Target	Distinguished
1 Function	2 Function	3 Function

2017 JDA + Product Deployment



2018 JDA + Product Deployment



- Dates reflect deployment on cloud instance except for Nostradamus

VWAC Phase II — Utopus Insights Strategic Agreement Summary

Product Use/Development

- **Value/Metrics Quantifications-** help make the “**Business Case**”
- Market Validation- help understand the value proposition
- Product Feedback- share feedback as we currently provide
- Customer/Market Intelligence- serve on Utopus Customer Advisory Board
- Pilots- continue engagement in co-development
- **Employee Exchange-** enable employees to serve in growth assignments

Vermont/On-site

- **Reference Site-** serve as the showcase for the tools/system
- External Funding- seek and secure external funding (example DOE grants)
- Innovation Expansion- expand scope in-state where appropriate
- Innovation Pipeline- generate awareness and future collaborations for work

External Advocacy

- Branding- allow use of Company Trademarks and testimonials
- Stakeholder Engagement- provide support and advice for outreach
- Strategic Presence-collaborate with Utopus to identify key industry contacts
- Voice of Innovation- jointly develop and publish papers and articles
- Sales Sustainability- assist in ongoing development of sales and marketing

VWAC Phase II — Weather Status

Developments

- *Forecasting and Visualization Improvements*
 - VELCO Nowcasting capability implemented which provides on-demand forecasts for weather events
 - Testing underway for Utopus Insight's (UI) Nostradamus weather model product, this is a new capability provided by UI and will serve to assist with VWAC's ensemble forecasting
 - Version 2 of Weather Insights visualization implemented which provides:
 - Capability to host additional users beyond the original twelve who beta tested the site
 - Improved dashboard controls that correlate forecast information with the live screen
 - Expanded weather data throughout the ISO New England domain on a 3km grid
 - GIS asset layers (VEC at this time with roll out to the rest of VT DUs)
- *Instrumentation*
 - Seven new weather stations and ice sensors ordered; to be installed at VELCO substations by the end of Q4
 - Four new weather stations online (3 from Lyndon State, 1 from Norwich University)

Next steps

- Finalize weather station substation designs/labor estimates and schedule installations
- Continue improvements to Weather Insights visualization and expand to ingest additional DU data

Now Casting Capability

- “Now Casting” is now available as a test version on the VELCO HPCC
- Atmospheric Data Sciences (ADS) has developed this capability in partnership with VELCO
- We now will be able to run a quick forecast right before potential event will occur
- The VWAC team will be working with both VELCO Operations and GMP to build some process around this new weather capability

Now Casting Capability

Nowcasts:
 NCEP Boundary conditions: Rapid Refresh (RAP)
 Initialized on-demand at any hour when the HPCC is available.
 Forecast length: 18 hours.

Date Initialized (UTC/LT)	Forecast Model Run	% Complete
2017-09-20 9pm/5pm	21Z	100.0
2017-09-20 5pm/1pm	17Z	90.0

Forecasts:
 NCEP boundary conditions: North American Mesoscale Forecast System (NAM)
 Initialized at 00Z/06Z/12Z/18Z when the HPCC is available.
 Forecast length: 72 hours

Date Initialized (UTC/LT)	Forecast Model Run	% Complete
2017-09-21 12pm/8am	12Z	100.0
2017-09-21 6am/2am	06Z	100.0
2017-09-21 12am/8pm	00Z	100.0
2017-09-20 6pm/2pm	18Z	100.0

Callout 1 (Nowcast section): Nowcast section. If a model has been run in the past two days, it will show up here.

Callout 2 (Forecast section): Regular forecast section. If a model has been run in the past two days, it will show up here.

Callout 3 (Legend): Model runs are listed starting with the most recent initialization:
 Green = Most recent
 Orange = 2nd most recent
 Red = Oldest

Callout 4 (% Complete): The % complete numbers update when you refresh the page. Click on these to open new windows for each model initialization.

VWAC Phase II — Short- and Long-Range Planning

Developments

- Final report delivered of Solar Prospecting analysis which identified areas that would be suitable for locating solar energy based upon potential for production
- Solar Prospecting team produced both wind and solar prospecting maps highlighting both total production potential as well as intermittent production
- Storage analysis completed on Vermont system with areas for potential storage identified based upon system conditions and renewable generation potential
- Joint development work on power flow modeling enhancements with UVM beginning with data collection and representative model development
- Initial power flow modeling completed using a simplified version of the VELCO network

Next steps

- Next quarter UVM will extend work to include enhanced VELCO network model
- Also the project team will integrate existing power flow tool's information aid in work with UVM
- Short and long range planning team to revisit scope early next year as UI tools become operational

VWAC Phase II — Peak Load Management

Developments

- Team examining schedule recovery on work due to UI/IBM transition, may need to look at operating this portion of the project through summer 2018 to ensure operability as full capability of this work was not available for summer 2017
- Second version of Peak Load Management deployed September 15th
- Developed ISO NE peak probability forecast by correlating Vermont peak data with ISO peak data
- Email alert deployed for both the Vermont monthly peak and the ISO-NE annual peak predictions.
- DUs entered Distributed Energy Resources (DER) to identify resources that can be deployed to manage peak.

Next steps

- Develop feedback page to document deployed DER
- Develop longer range weather forecasting capability as UI products are implemented Fall of 2017
- Assess schedule as experience is gained with the use of the process and tools

VWAC Phase II — Platform Development

Developments

- VELCO HPCC now running VELCO WRF and IBM Deep Thunder weather models as well as supporting Nowcasting capability
- VELCO, ADS, and UI teams developed a deployment and testing plan for the UI products that considers transition to the new VELCO data center next summer
- Weather models will continue to be run on the VELCO HPCC with UI products deployed to cloud as the VELCO data center is constructed
- VELCO plans on running MaestrOS, Xplore, and HyperCast on the cloud for a prove-out period of approximately 6-9 months, VELCO then will then determine the best hardware strategy to support VWAC
- Platform team is now considering overall data management plan as OS/soft community agreement is finalized

Next steps

- Support deployment and testing plan with UI on cloud deployment for 2017
- Identify “super user” group for Xplore and MaestrOS development as VELCO and DU specific applications are implemented
- Ensure applications developed in the VELCO portal are migrated to MaestrOS

VWAC Phase II- Workshop Summary

- Burlington-September 27th
- Over 30 attendees, VPPSA, BED, GMP, VEC, Lyndon State, UVM, VELCO, UI, and IBM
- Demonstrations for the morning session with break out sessions in the afternoon
- Overall Action Items (others for each group)
 - Need to identify “super user” group
 - VELCO/UI to develop change management plan for product roll out this fall
 - UI to detail touch points on fall roll out plan for DUs and VELCO
- Next Workshop scheduled for December 13th in Burlington

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Questions?

