

# Integrated Grid Planning: Technology for Analysis

Lulu Young, GridUnity  
November 16, 2017

# Integrated Grid Planning: Technology for Analysis

Analysis Use Cases

Distribution Planning

T&D Co-Simulation

Interconnection Analysis

Energy Efficiency Forecasting

Capital Spending Optimization

Power Flow Modeling

Forecasting

Mitigation Options

Engineering Analysis

Cost Analysis

Solution Portfolios

Scalable Platform Components

Reporting Dashboards

Graphical Interface

Automation Framework

Source Systems for Data Intake

Grid Operations (ADMS/SCADA)

Meter, AMI Data

Short term forecasting (e.g. Load)

Asset Management (EAM)

Geospatial (GIS)

Customer Information and Billing (ERP/CIS)

External (Weather, Markets, ISO)

# Commercialization of Prior Innovation: Hosting Capacity Analysis

## Insights into grid capacity

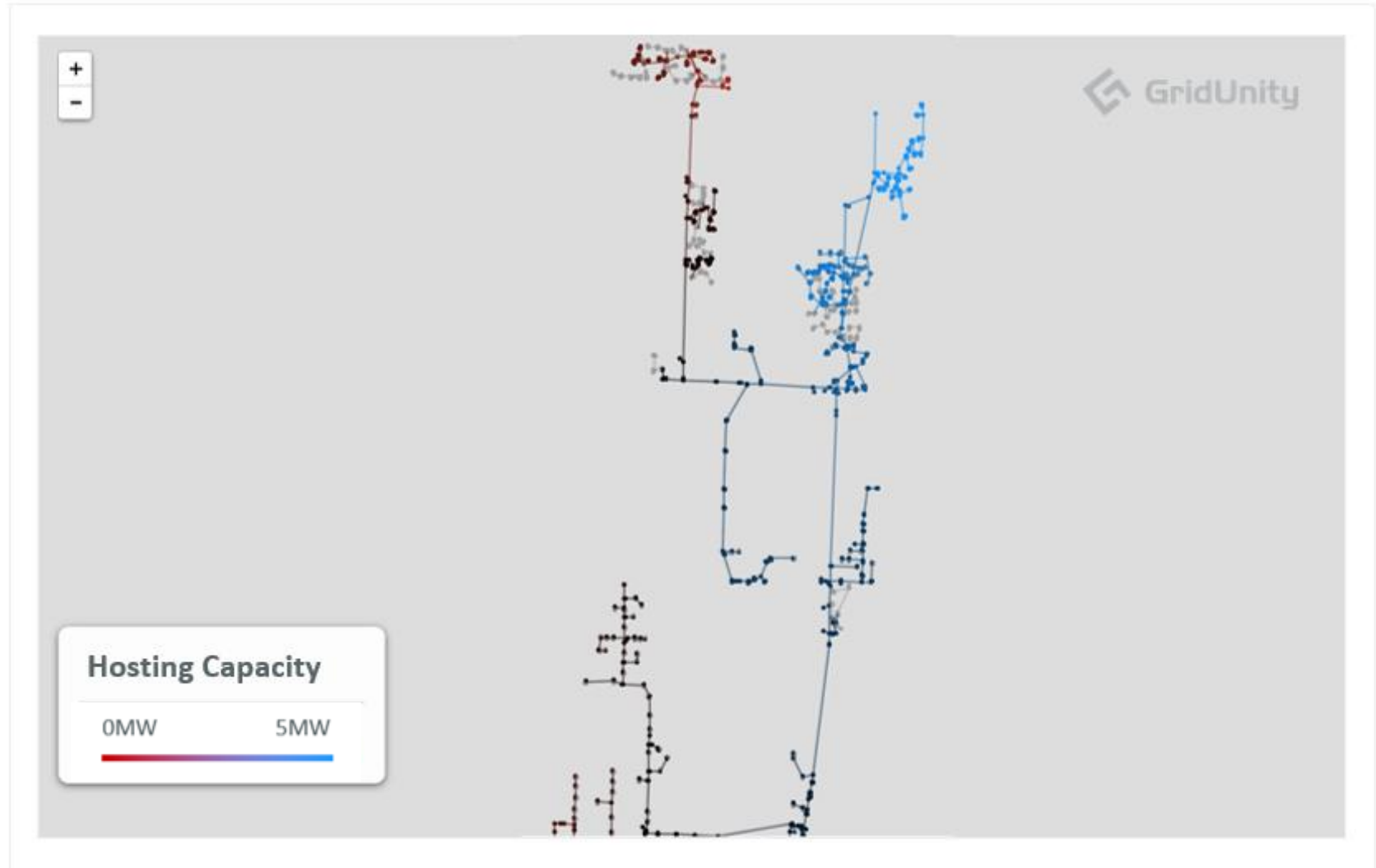
Nodal Hosting Capacity determines maximum size DER that can be added to a specific location without requiring upgrades or causing violations

## Proactive simulations

Thousands of power flow and fault simulations use multiple sizes of generator and assess criteria including thermal protection, power quality/voltage and safety/reliability

## Proactively publish maps

Results may be visualized on layered maps to give internal users and new energy developers custom views tailored to their data access level



# Current Innovation Partner Project: Co-simulation of T&D

## One simple GridUnity interface

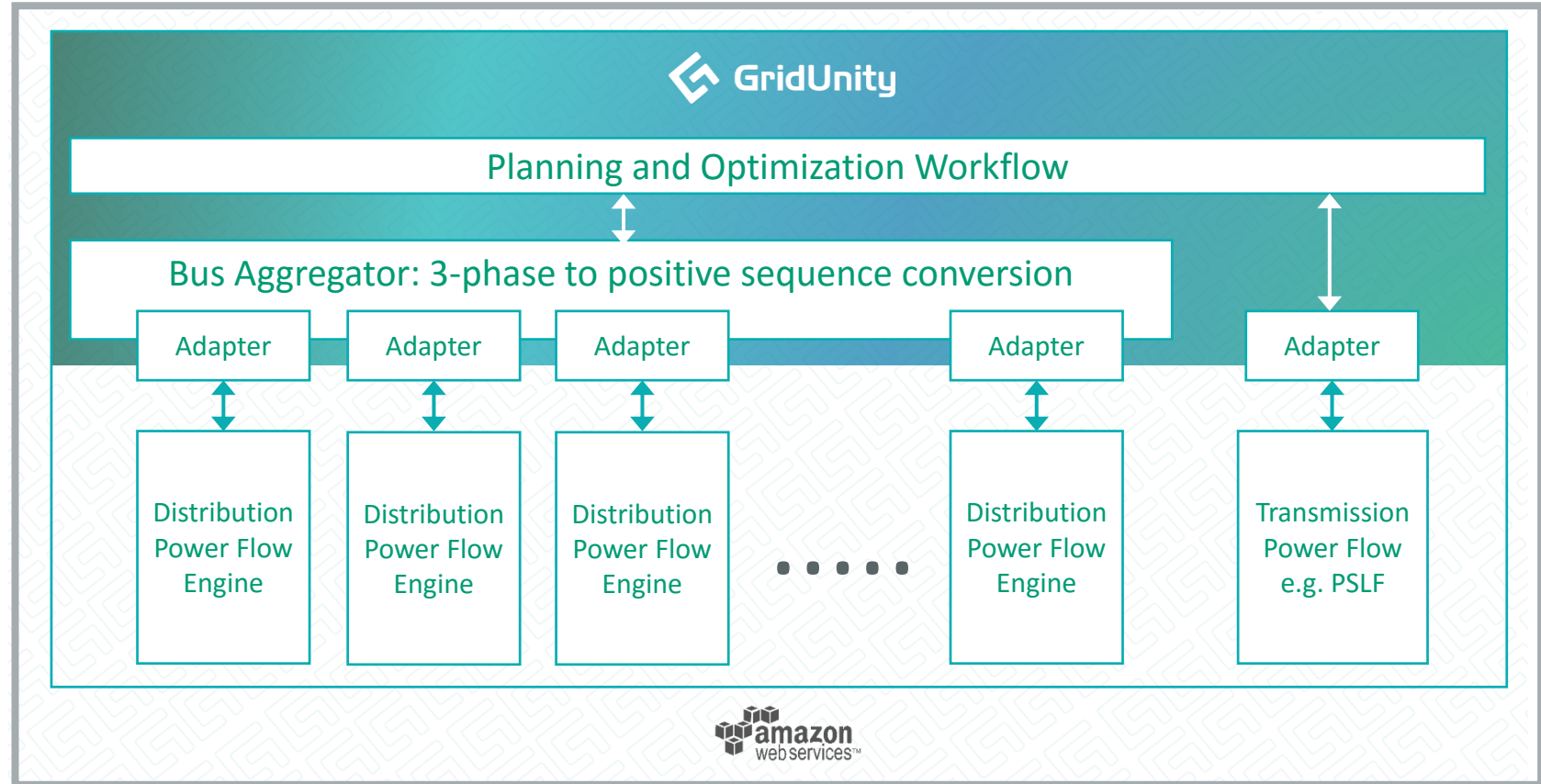
Simple interface allows users to upload existing models, easily create growth and deployment scenarios, and visualize results

## Holistic grid planning

GridUnity platform enables transmission and distribution to collaborate in holistic grid planning

## Industry collaboration

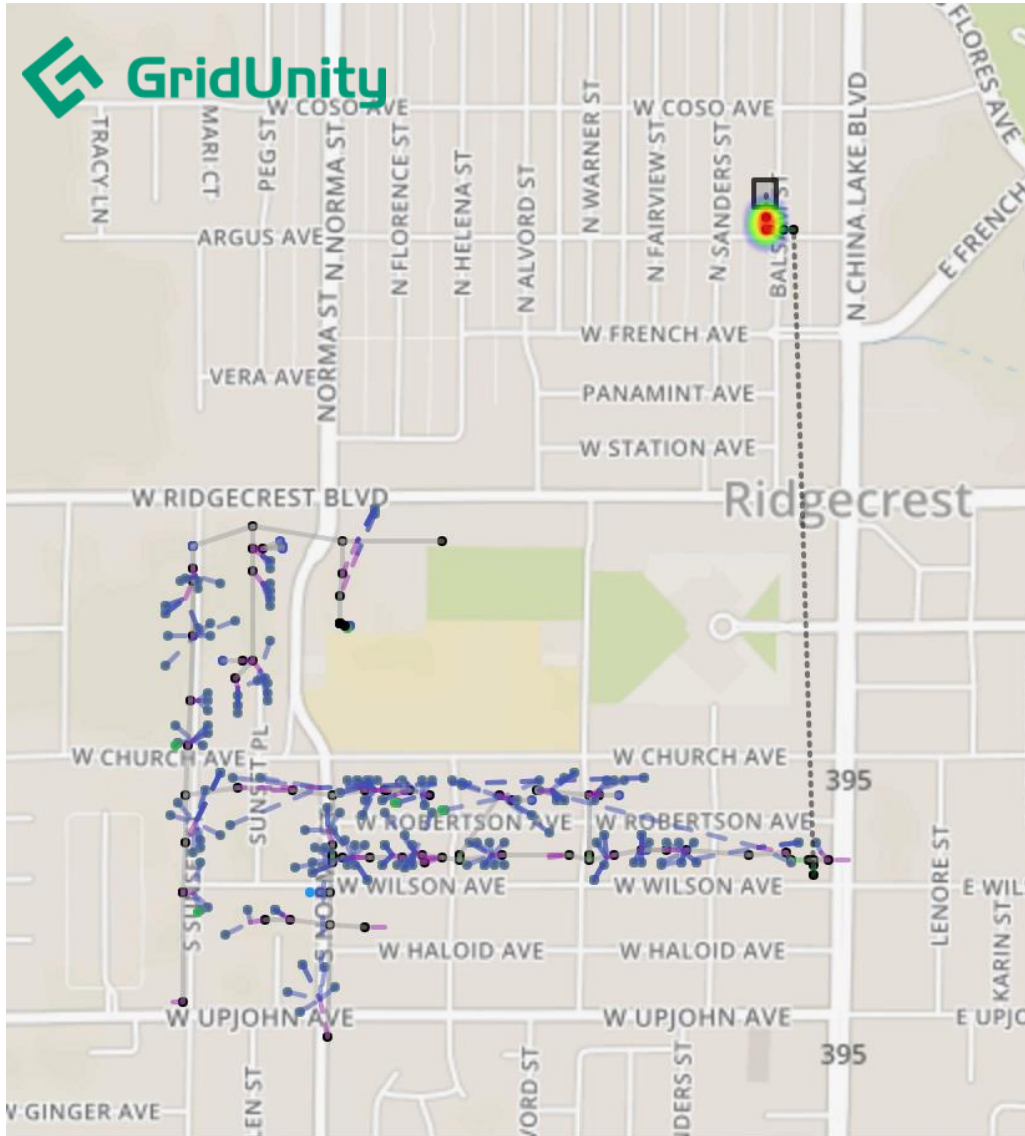
System of Systems design supports industry collaboration through tool-agnostic approach



“Co-Simulation of Transmission and Distribution in an Advanced Analytics Elastic Cloud Computing Environment” (SUNSHOT DE-EE0007579)



# Grid Analytics for the Distributed Energy Utility



- ❖ **Holistic Forecasting:** create future case scenarios that predict DER growth penetration levels and associated impacts to the grid using engineering criteria and incorporating multiple models spanning T&D, as applicable.
- ❖ **Program Planning and Optimization:** Integrate energy efficiency/incentive programs into holistic grid planning and mitigation
- ❖ **Mitigation Analysis:** Identify possible capital investments and non-wire strategies that best align with current utility objectives such as system reliability, power quality, carbon reduction and cost.