

# HAIDA GWAII RFEOI WEBINAR

NOVEMBER 2, 2012



FOR GENERATIONS

# BC HYDRO PRESENTER



## James Grant

- BC Hydro
- Project Manager for Haida Gwaii RFEOI

# BC HYDRO PRESENTER



## Hamid Tamehi

- BC Hydro
- Engineering Team Lead for Non Integrated Areas (NIA)



## Rhea Halfnight LeFlufy

- BC Hydro
- Sr. Remote Community/Aboriginal Relations Coordinator

# AGENDA

- Introduction
- RFEOI Information and Process
- RFEOI Form
- RFEOI submission instructions
- Technical Information
- Q&A

# RFEOI INTRODUCTION

- BC Hydro remains committed to pursuing cost-effective and reliable electricity generated by clean or renewable resources as part of the effort to reduce the use of diesel-generated electricity on the North Island of Haida Gwaii.
- Looking for projects that would maximize the displacement of diesel fuel, have minimal adverse local impacts, satisfy the technical needs of the North Grid, meet the electricity demand of customers, and demonstrate significant benefits for the communities of Haida Gwaii.
- RFEOI used where the number and types of potentially viable projects is not known.

# RFEOI CONTENTS

Schedule 1: RFEOI Timetable

Schedule 2: Technical Information

Schedule 3: RFEOI Form

- BC Hydro may amend the RFEOI, including Schedules, from time to time by the issue of Addenda.

# RFEOI PROCESS

- For information gathering (market test).
- RFEOI itself does not result in a contract such as an electricity purchase agreement (EPA) with BC Hydro.
- A commercial process is required before an EPA may be signed.
- At the conclusion of the RFEOI, BC Hydro will use the information received to determine the next steps on how to proceed with a commercial process, if any.



# RFEOI FORM

## CONTENTS

- Respondent and Respondent contact
- Capacity, Expected Energy, Plant Availability, Capacity Factor
- Resource Type (e.g., Hydro, Wind, Biomass, Biogas, etc.)
- Technology Type (e.g., Francis Turbine, ORC, gasification, etc.)
- In Service Date, desired/expected contract term
- Estimated Capital Cost, Operations & Maintenance (O&M), fuel, other costs
- Description of Resource Data (years of data, correlations to energy etc.)
- Description of expected operating characteristics (ability to meet the off-grid demand characteristics)
- Indicative Energy Price (price of energy required to meet O&M, financing requirements, and extract a reasonable rate of return)
- Description of financing plans
- Description of plans for consultation and engagement with Haida
- Business relationship with communities and benefits to Haida Gwaii

# RFEOI SUBMISSION INSTRUCTIONS

## Submission Closing/Date Time

The closing date and time for the submission of responses to this RFEOI is **4:00 p.m.** (Pacific Standard Time) on **November 23, 2012.**

## Submission Requirements

RFEOI Forms in PDF format must be delivered electronically or by hard copy as follows:

- Electronic copy sent to the email address provided in the RFEOI (Subject Line: Haida Gwaii RFEOI).

OR

- Single hard copy or an electronic copy of the response in PDF format on a CD or a flash drive (memory stick) delivered to the mailing address provided in the RFEOI.

# RFEOI SUBMISSION INSTRUCTIONS

- In order to submit a response to this RFEOI, please complete the RFEOI form by filling out each field that is represented by a blue box.
- If two or more entities are cooperating in the submission of a response to this RFEOI, the response must be in the name of one Respondent, which will be considered by BC Hydro to be the prime Respondent. The response should identify all firms cooperating in the RFEOI process, their qualifications, and their respective roles.
- BC Hydro may, after the submission of a RFEOI response, request additional information from Respondents regarding their proposed projects.

# OVERVIEW OF NORTH GRID SUPPLY

- BC Hydro supplies electricity to Haida Gwaii via two separate, unconnected distribution systems: the North Grid and the South grid.
- The North Grid on Haida Gwaii supplies Masset and Old Masset, and the surrounding area as far south as Port Clements.
- The Masset diesel generation system is comprised of seven diesel generators with a combined capacity of 13.5 MW.
- With any new supply, we are responsible for maintaining power quality and reliability.

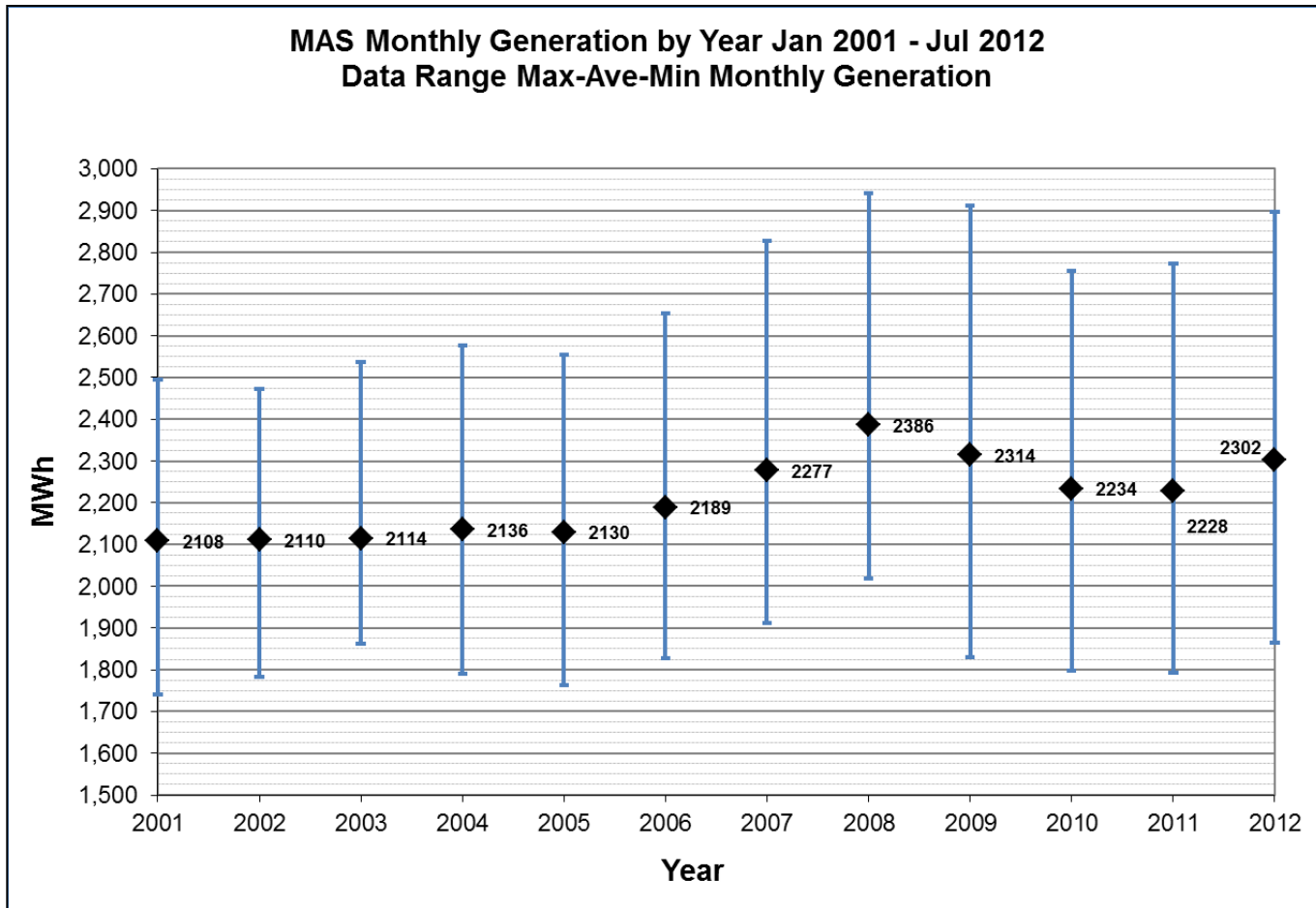
# MAS DGS F2014 PLANNED FLEET

<b>Stationary Generators</b>	<b>Road Mobile Generators</b>
MAS G1 – 2.865 MW	M165 – 1.00 MW
MAS G2 – 2.865 MW	M172 – 0.85 MW
MAS G3 – 2.865 MW	

# ANNUAL GENERATION (MWH)

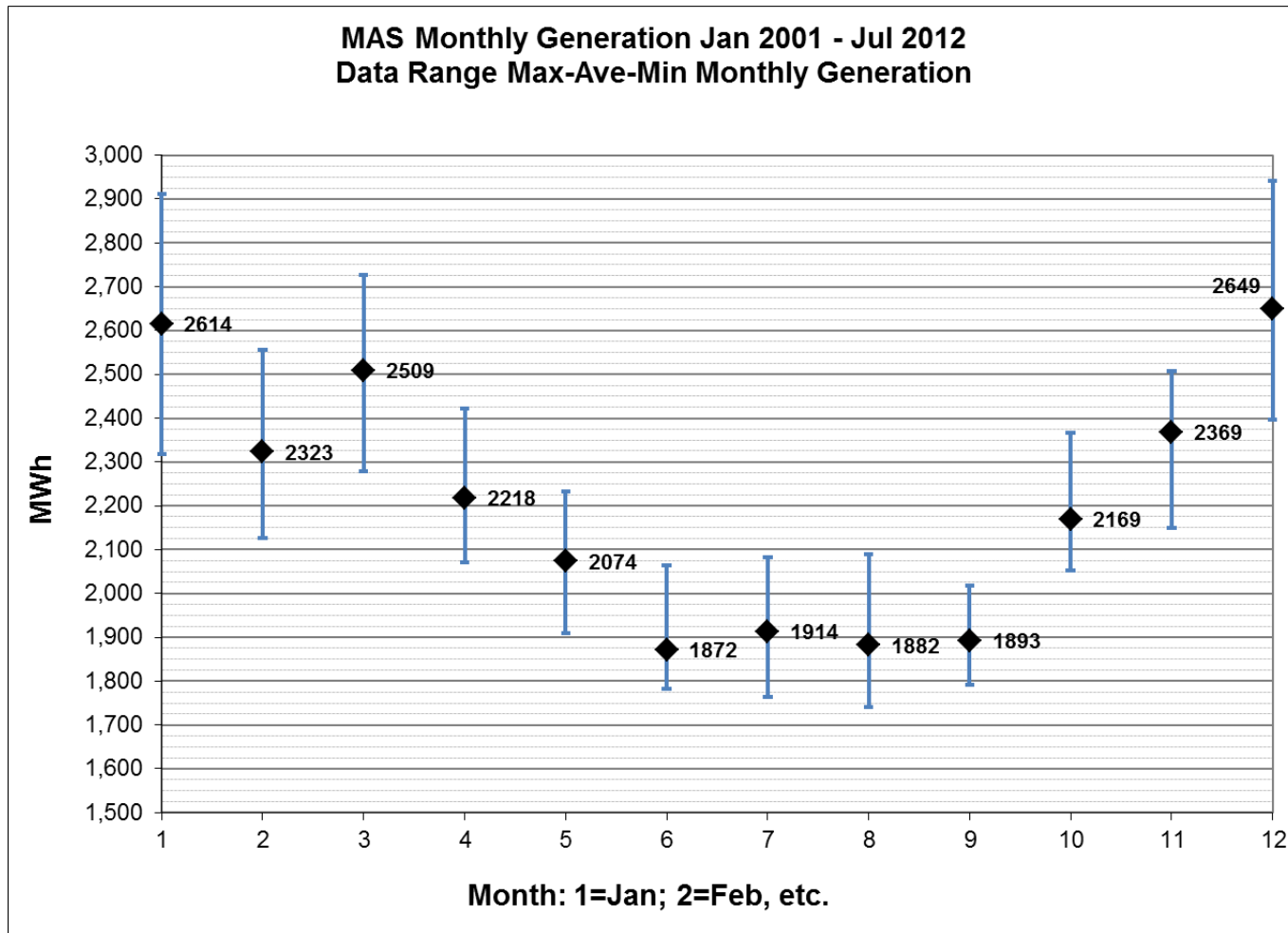
Year	Totals
2001	25,299.70
2002	25,325.01
2003	25,369.75
2004	25,636.46
2005	25,560.53
2006	26,272.36
2007	27,326.78
2008	28,636.39
2009	27,773.95
2010	26,804.30
2011	26,739.24
2012	N/A

# MONTHLY GENERATION (MWh)



Monthly energy generated by **year** – min, max and average

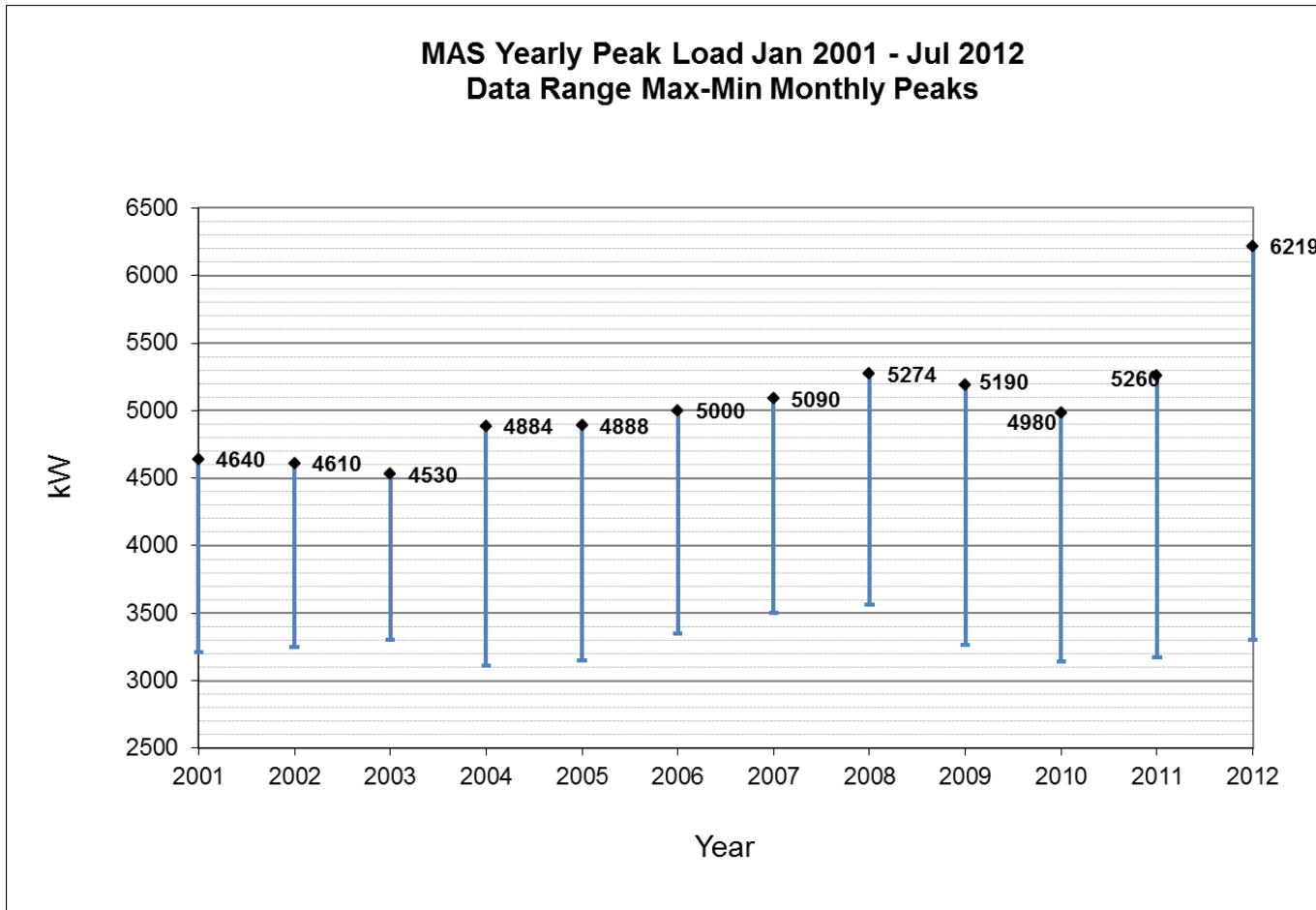
# MONTHLY GENERATION (MWh)



Monthly energy generated by **month** – min, max and average

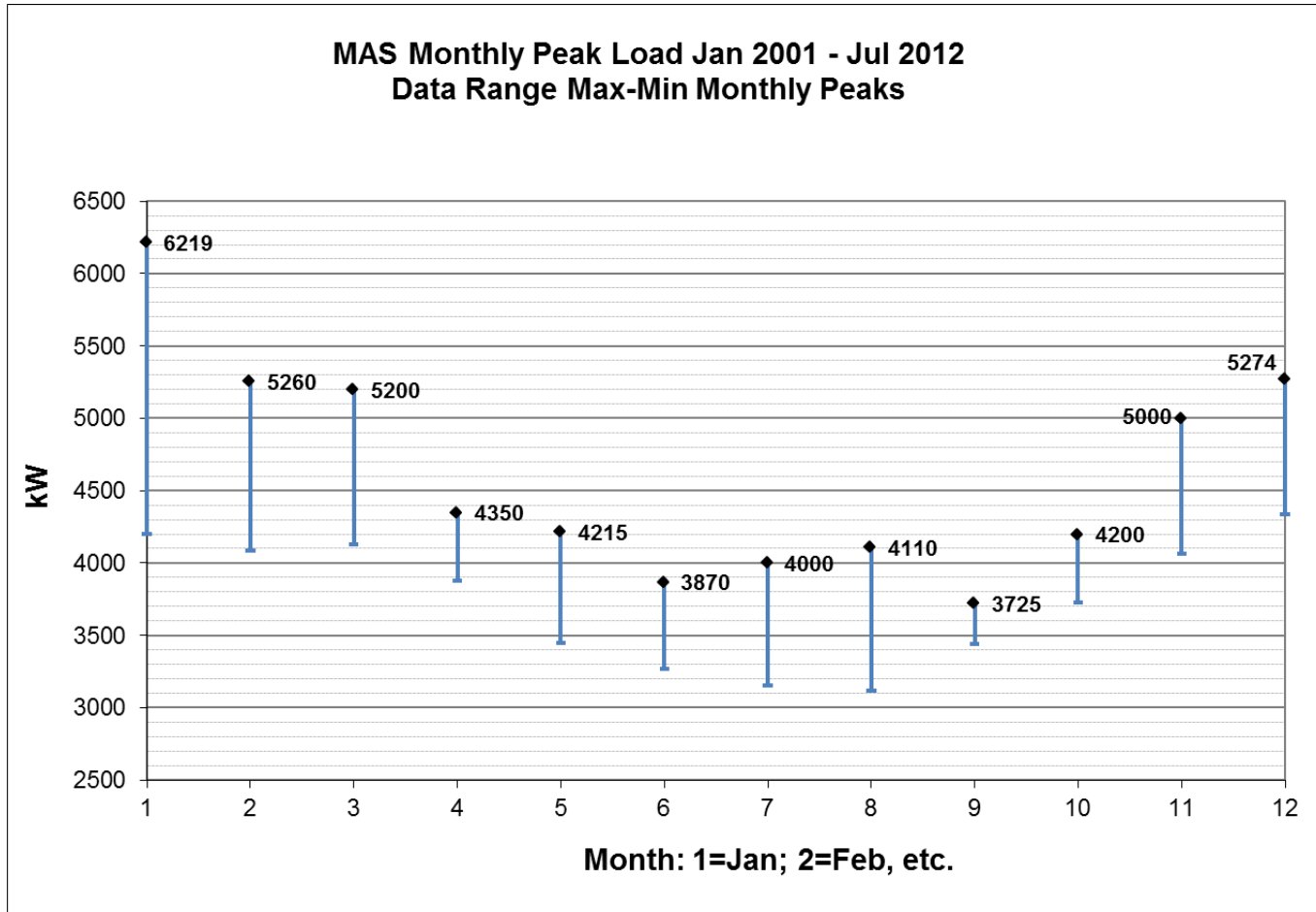


# MONTHLY PEAK LOAD (kW)



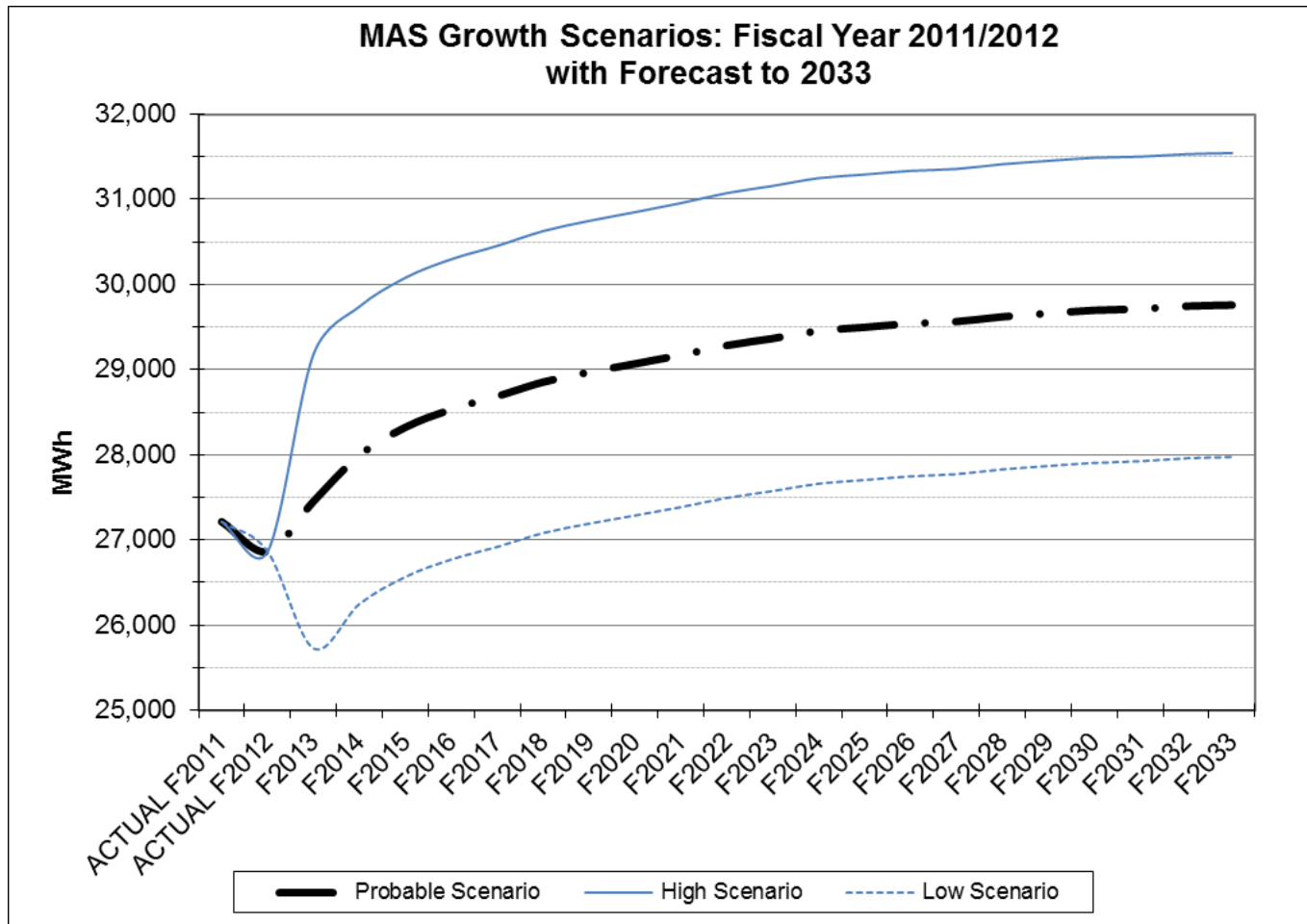
Monthly peak load by **year** – min, max

# MONTHLY PEAK LOAD (kW)

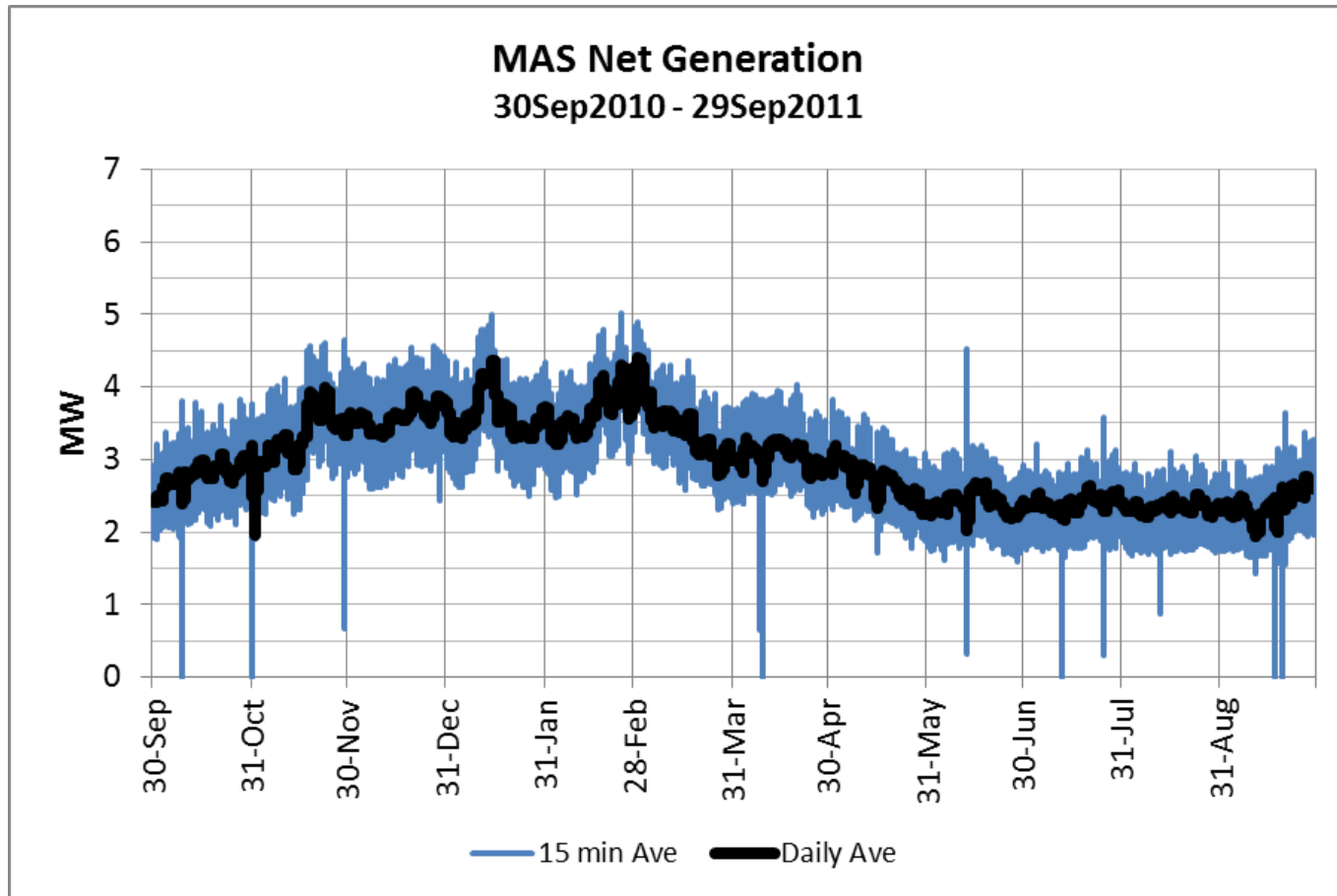


Monthly peak load by **month** – min, max

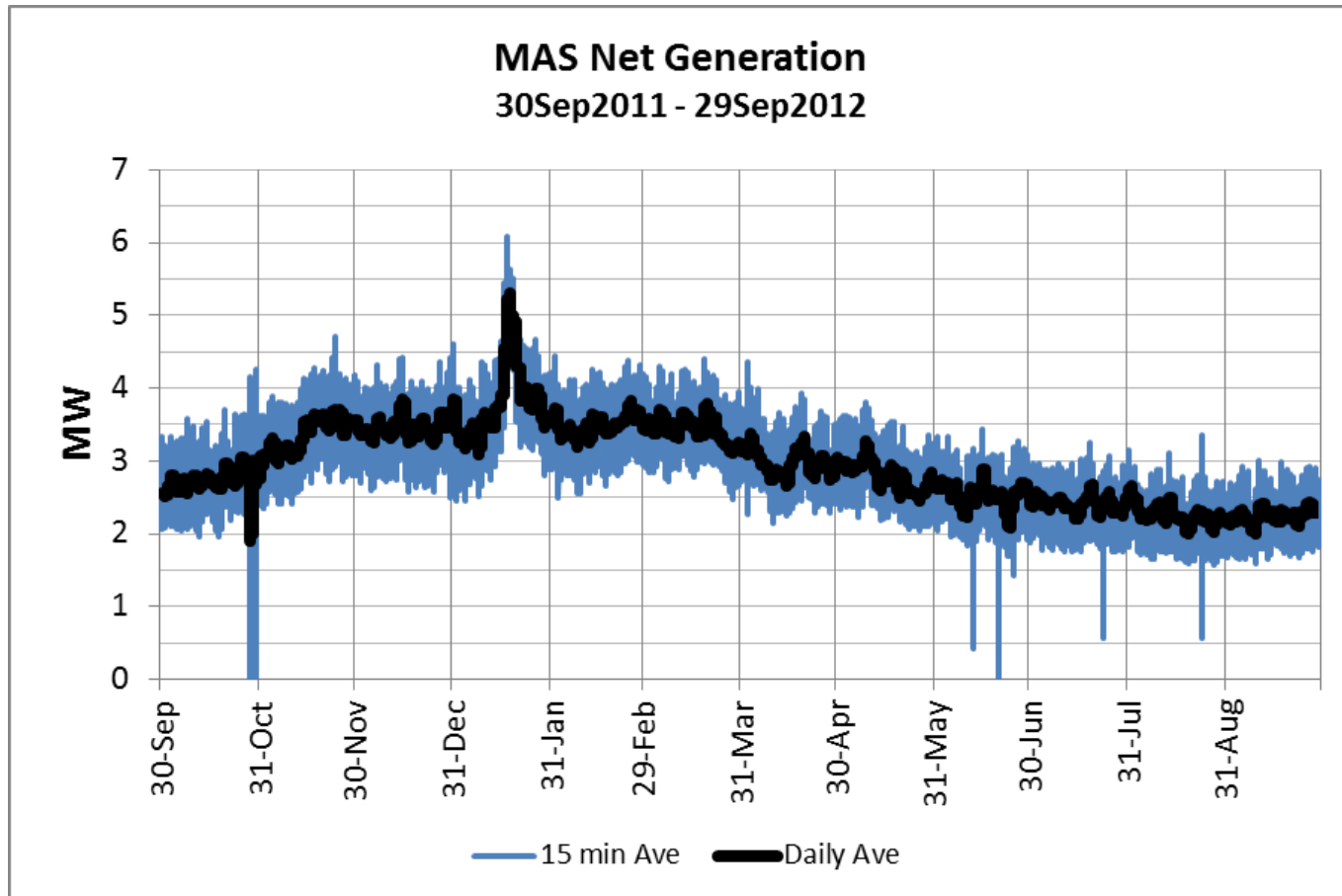
# FORECAST ENERGY (MWh)



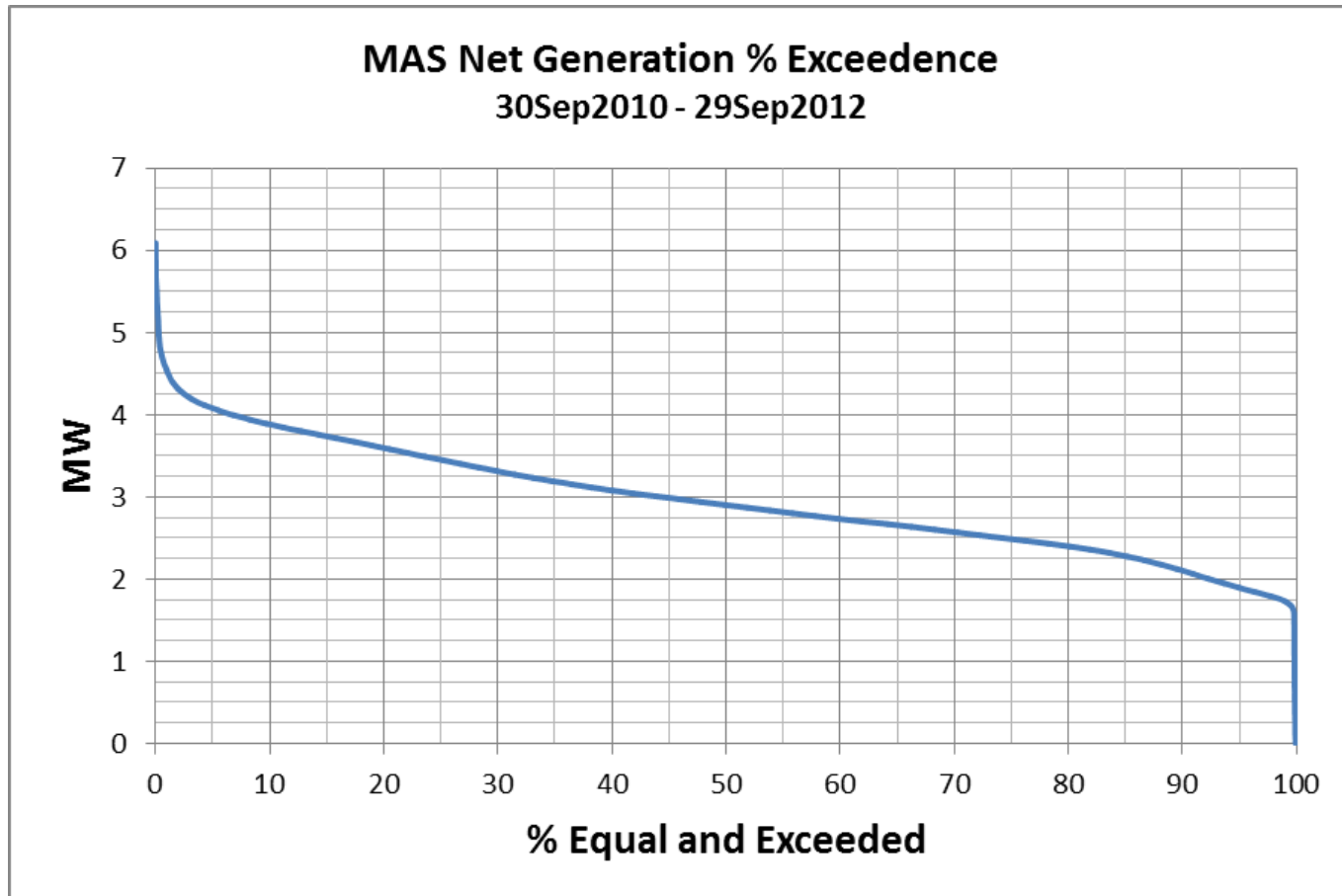
# MAS NET GENERATION (MW)



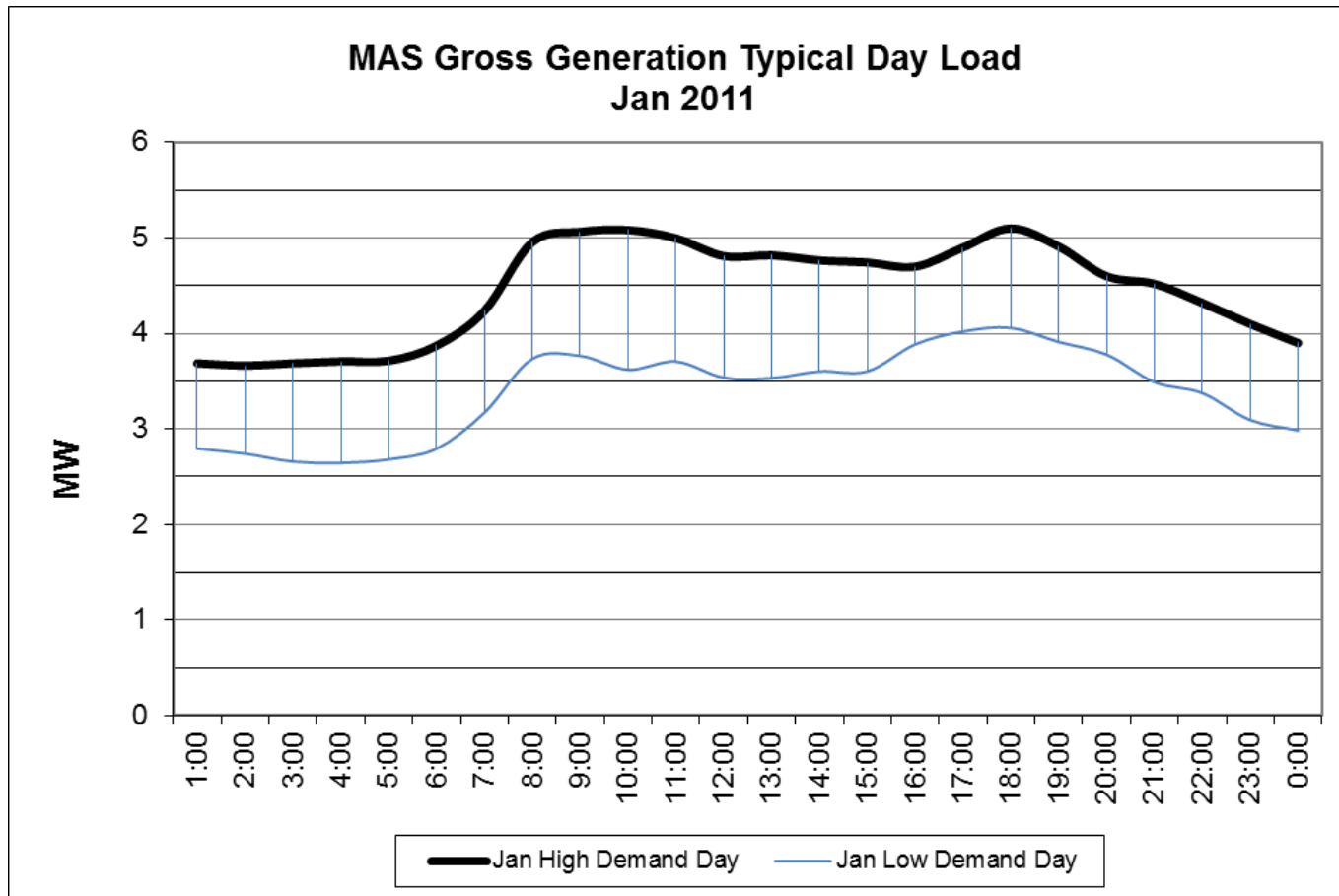
# MAS NET GENERATION (MW)



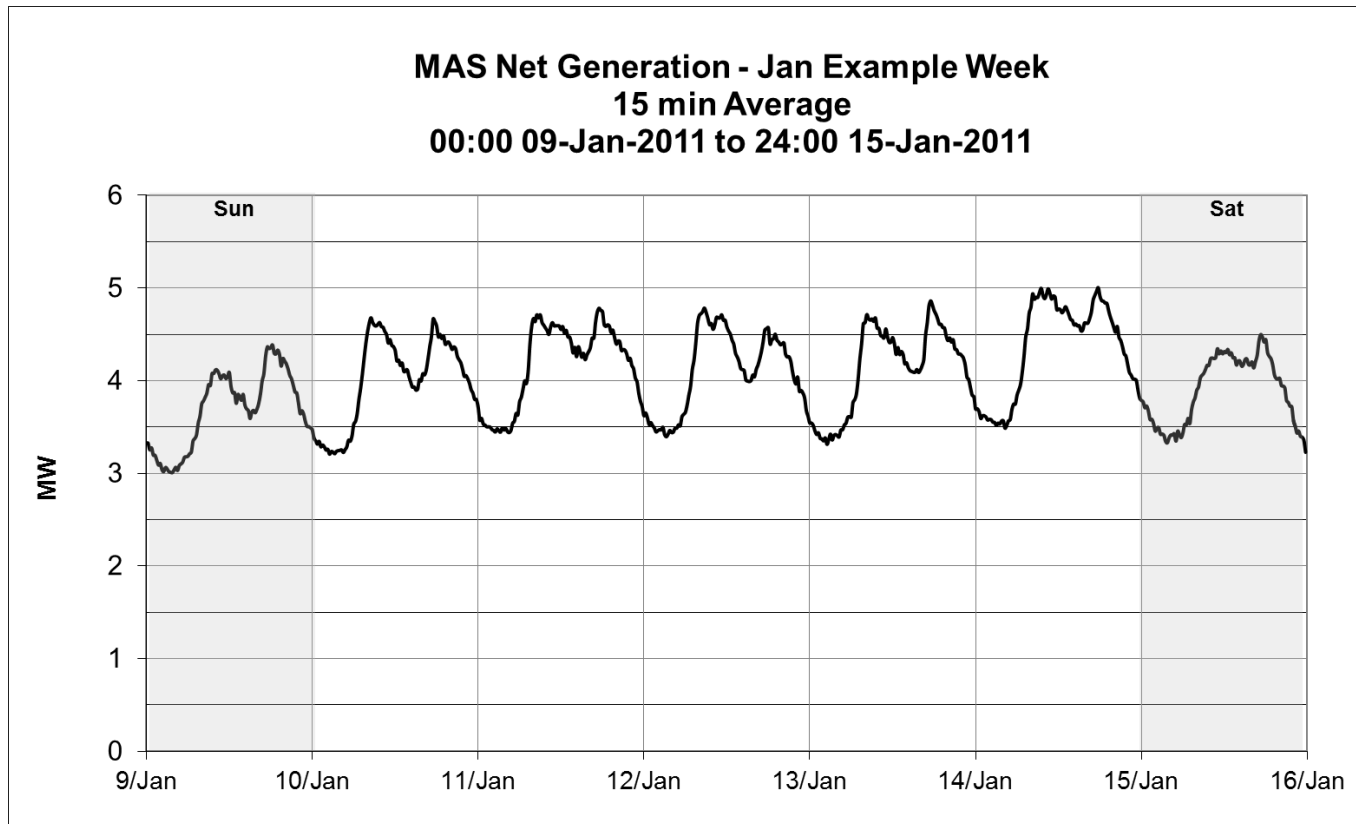
# MAS NET GENERATION (MW)



# DAILY LOAD PROFILE IN JAN 2011



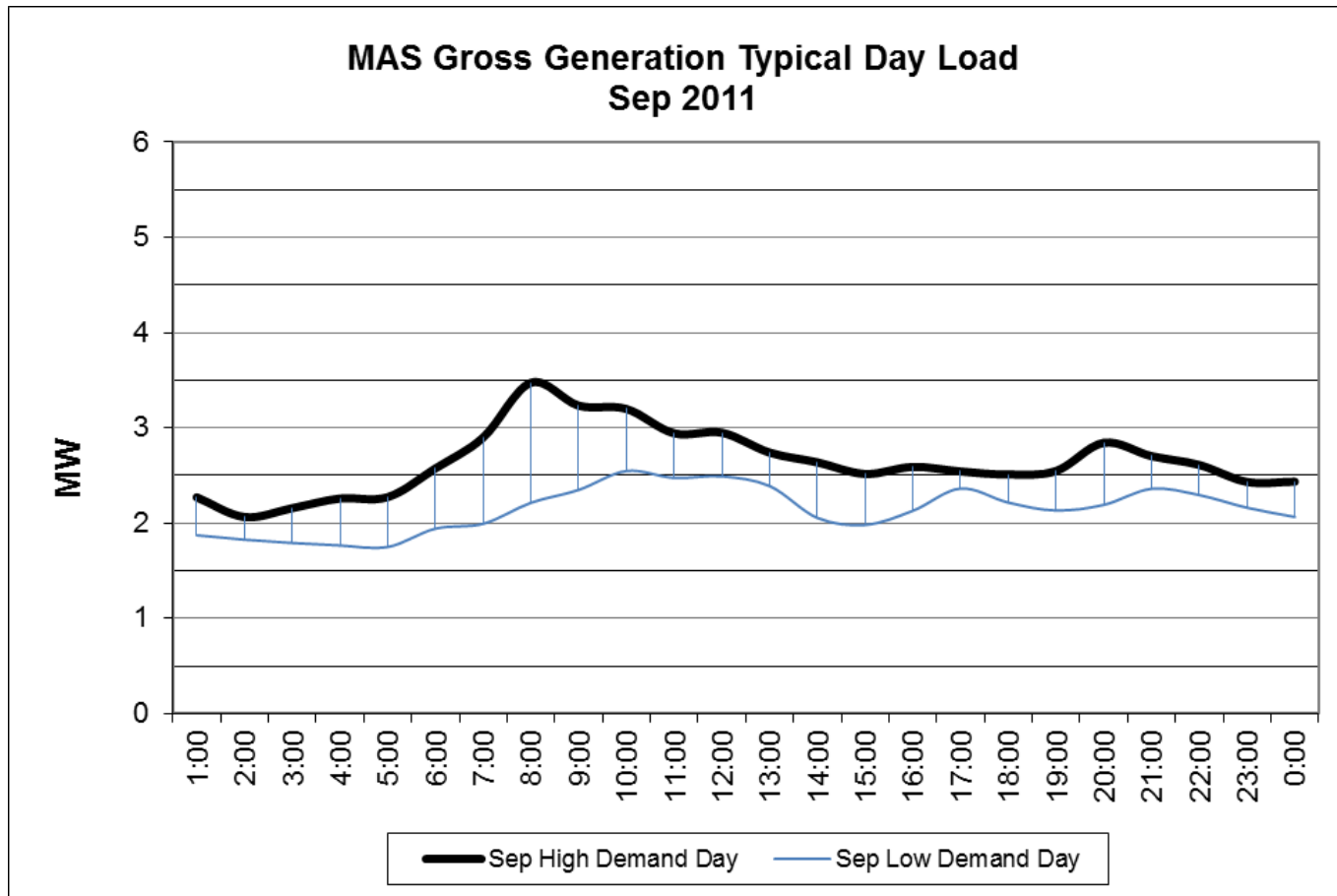
# WEEKLY LOAD PROFILE IN JAN 2011



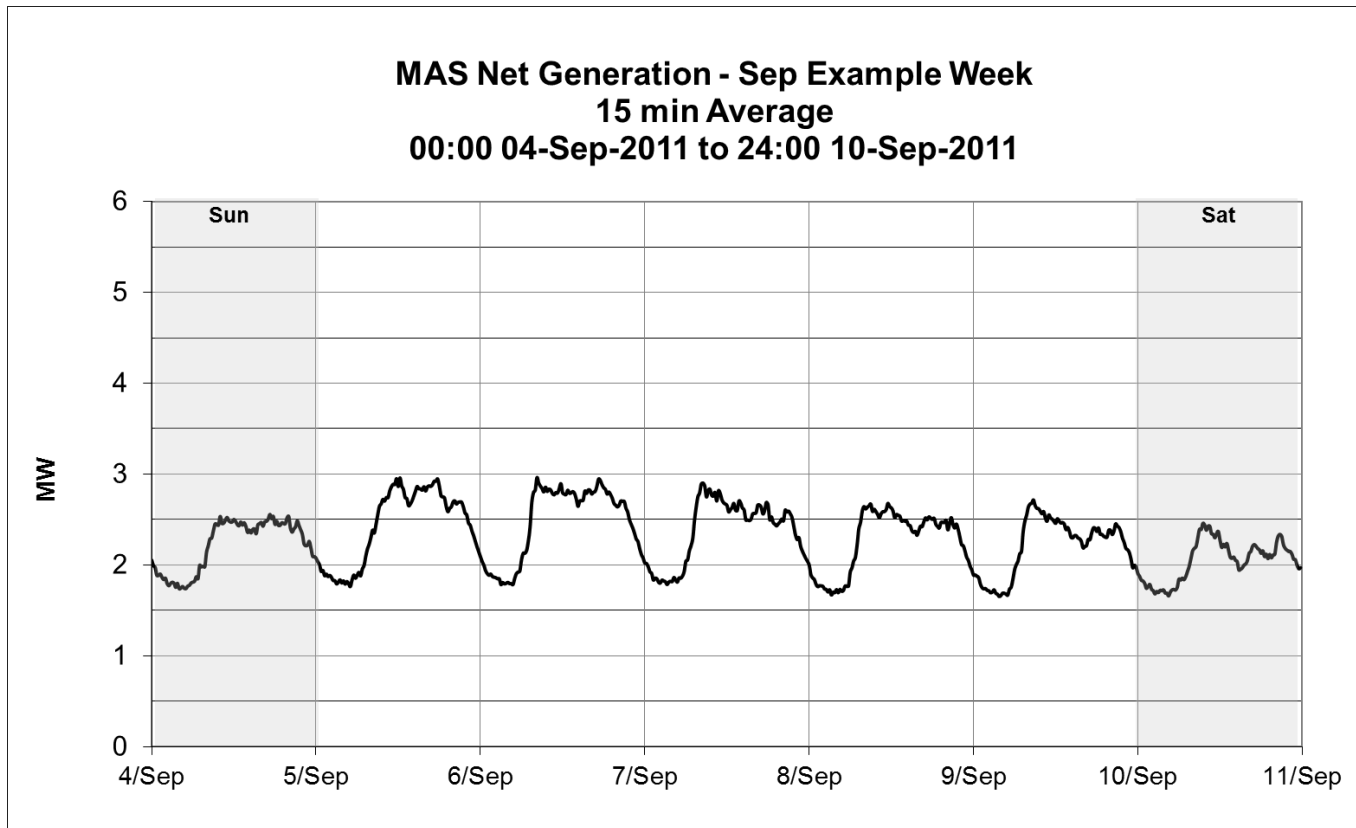
Example week showing daily variation



# DAILY LOAD PROFILE IN SEP 2011



# WEEKLY LOAD PROFILE IN SEP 2011



Example week showing daily variation

# MICROGRID CHALLENGES

- Maintaining voltage & frequency thresholds
- Dynamic loads
- Load following and non load following sources of energy

Diesel generation is a critical component:

- Reliable
- Fast load pick up
- Load following
- Spinning reserve
- Limitations – Must operate around 40-70% of rating on average

# SUPPLY PROFILES

Intermittent energy sources such as wind or solar:

1. Low penetration (<20%) – Diesels runs full time
2. Medium penetration (20-50%) – Diesels runs full time
3. High penetration (50-150%) – Diesels may be shut down during high availability

Increasing level of auxiliary systems and controls sophistication.

# SUPPLY PROFILES

Steady energy sources such as hydro & biomass:

1. Hydro – Turbines load follow with diesels as standby or cogenerate
2. Biomass
  - Internal combustion engine generators running on syngas load follow with diesels on standby or cogenerate
  - Turbines (steam or ORC) running on heat from biomass combustion provide base load (annual or seasonal) with diesels load following

# Questions

Phone line will be open for questions.

Written questions can also be submitted through Live Meeting.

