Northwest **Power** and **Conservation** Council

July 5, 2017

MEMORANDUM

TO: **Power Committee**

FROM: **Tina Jayaweera, Senior Energy Analyst**

SUBJECT: **Portland General Electric – Demand Response programs**

BACKGROUND:

Presenter: Josh Keeling, PGE

Summary: Given increasing renewable portfolio standards and shifting load dynamics, demand response is taking on greater importance in the Northwest. This presentation will give an overview of Portland General Electric's recent work in demand response deployment. The presentation will cover PGE's DR action plan in their 2016 IRP, provide an overview of pilots and programs, as well as provide lessons learned for other NW utilities.

Relevance: The Seventh Power Plan found that at least 600 MW of demand response should be developed to meet peaking needs and satisfy regional resource adequacy standards.

Workplan: A.2. Implement the 7th Plan: Demand Response

Background: Josh Keeling oversees demand-side resource development at Portland General Electric, managing the development of new programs in demand response, pricing, and energy information. Prior to joining PGE, Josh served as a manager of statistical analysis at the Cadmus Group. He is a voting member of the Power Council's Regional Technical Forum and has contributed to a number of standards in DSM including work for USDOE, ANSI, and IPMVP. He also sits on the board of Smart Grid Northwest. His

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background is in quantitative methods and has a master's in systems science from Portland State University.

More Info: Portland General Electric's website: https://www.portlandgeneral.com/

Demand Response Programs and Pilots at PGE

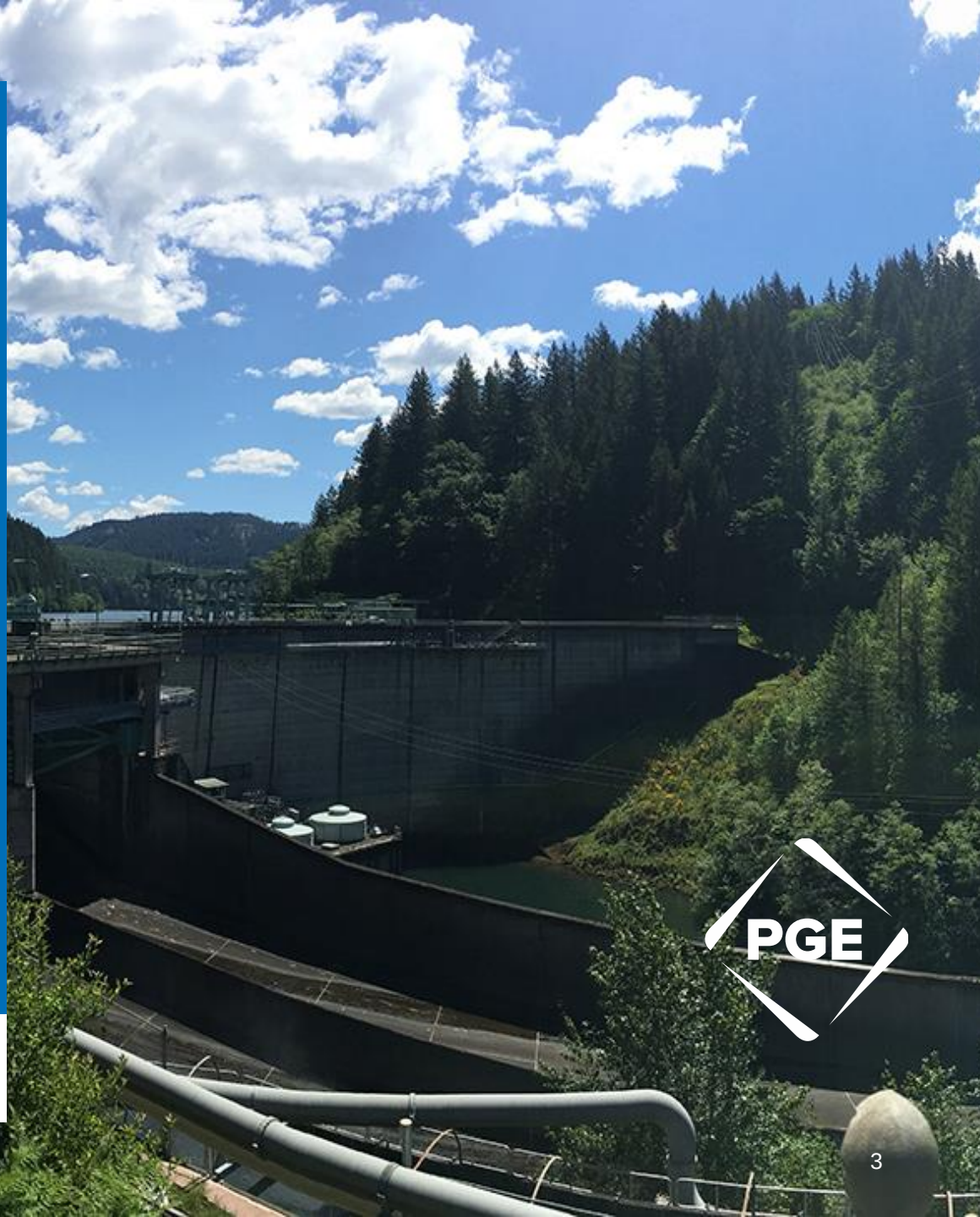
Josh Keeling, Demand-Side Resource Development

July11th, 2017

Agenda

- Background
- Pilots and Programs
- Challenges for Demand Response in the Region
- Demand Response and Energy Efficiency

Background



Demand-Side Resources at PGE

- Portland General Electric is committed to DSM as part of a least-cost, reliable, and sustainable resource portfolio
- PGE believes DSM can and should:
  - Benefit all customers
  - Be responsive to systems needs
  - Fit customers' lifestyles
  - Realize multiple value streams
  - Be reliable and low cost
- Connected devices and the growing adoption of smart technologies provides an opportunity to provide a new form of cost-effective DSM

Commitment to Demand Response

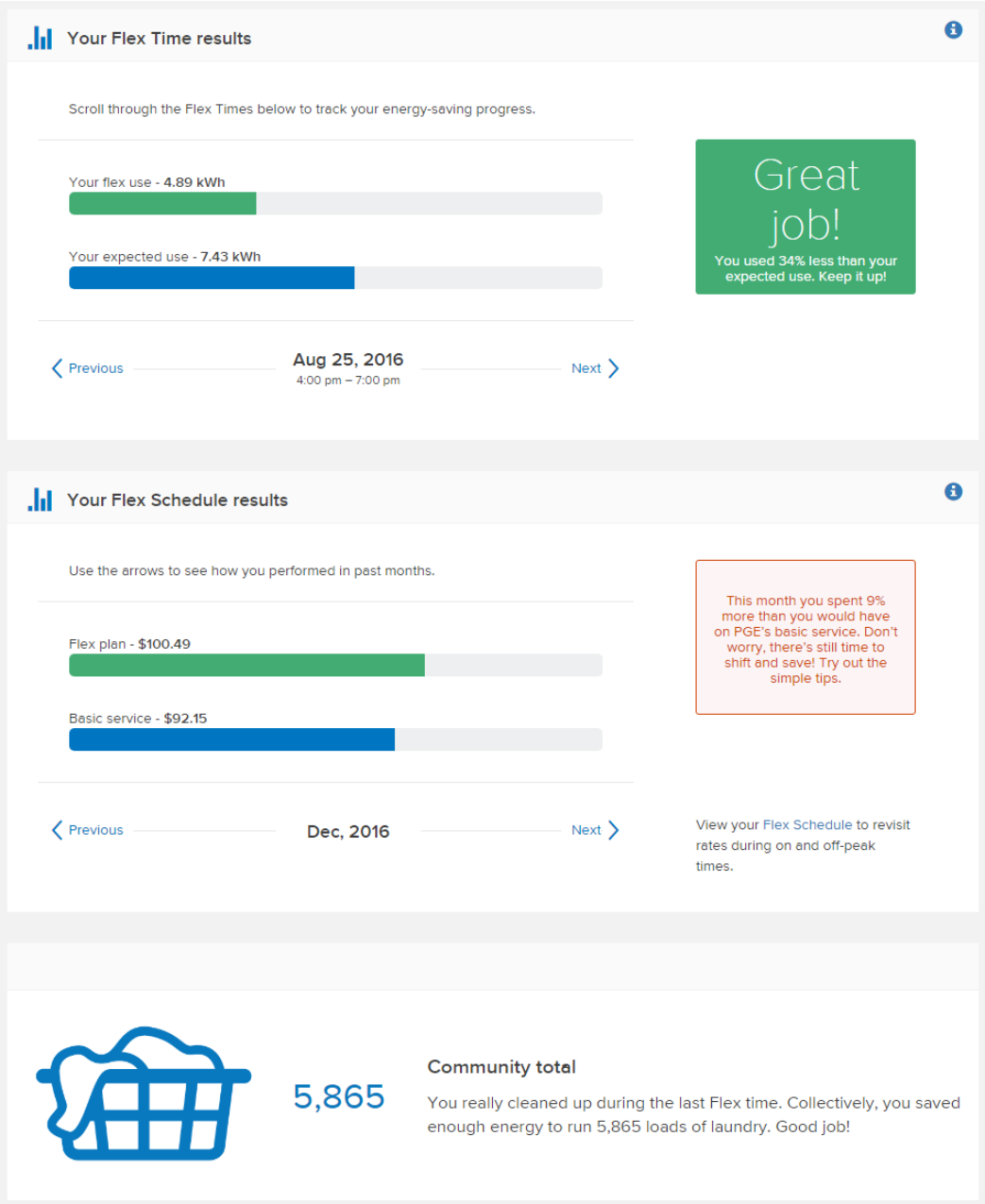
- Targeted Demand Reductions:
  - 2021: 78 MW (Winter), 74 MW (Summer)
  - 2035: 197 MW (Winter), 182 MW (Summer)

Class	Program	Delivery Type	Summer	Winter
Residential	Behavioral DR	Opt-out	26.0	36.8
Residential	Water Heating DLC	Opt-in	1.6	3.4
Residential	TOU	Opt-in	0.8	1.0
Residential	PTR	Opt-in	1.1	1.3
Residential	BYOT - AC	Opt-in	11.3	0.0
Residential	BYOT - Space Heating	Opt-in	0.0	1.9
Residential	BYOT - AC/Space Heating	Opt-in	2.4	3.5
Small C&I	AC DLC	Opt-in	0.3	0.0
Small C&I	Space Heating DLC	Opt-in	0.0	0.1
Small C&I	Water Heating DLC	Opt-in	0.0	0.0
Small C&I	AC/Space Heating DLC	Opt-in	0.1	0.1
Small C&I	PTR	Opt-in	0.0	0.0
Medium C&I	Third-Party DLC	Opt-in	11.2	11.0
Medium C&I	Curtailable Tariff	Opt-in	0.9	0.9
Large C&I	Third-Party DLC	Opt-in	15.1	15.3
Large C&I	Curtailable Tariff	Opt-in	3.2	2.6

Pilots and Programs

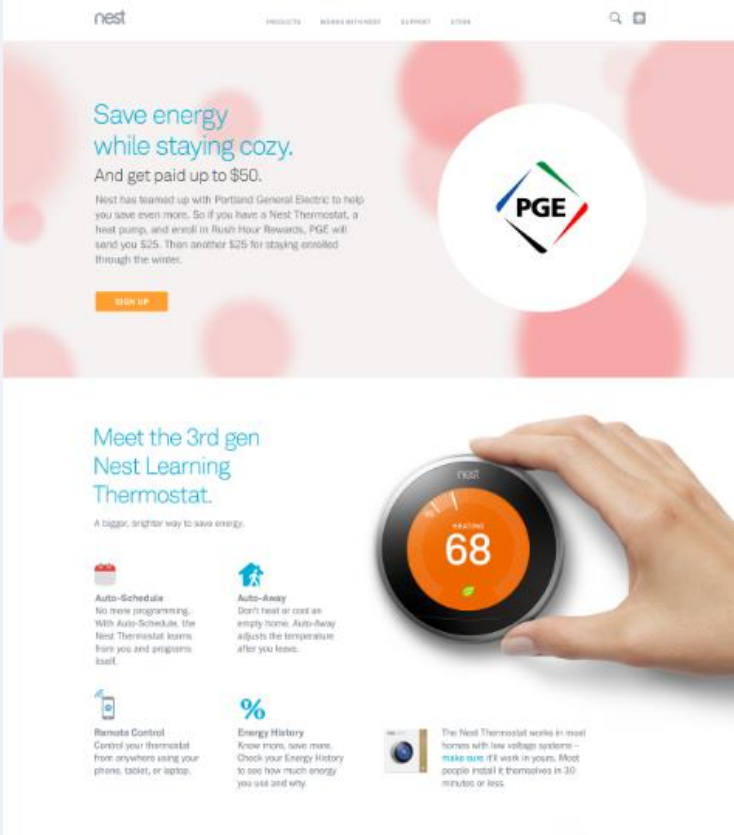
Flex Pricing Pilot

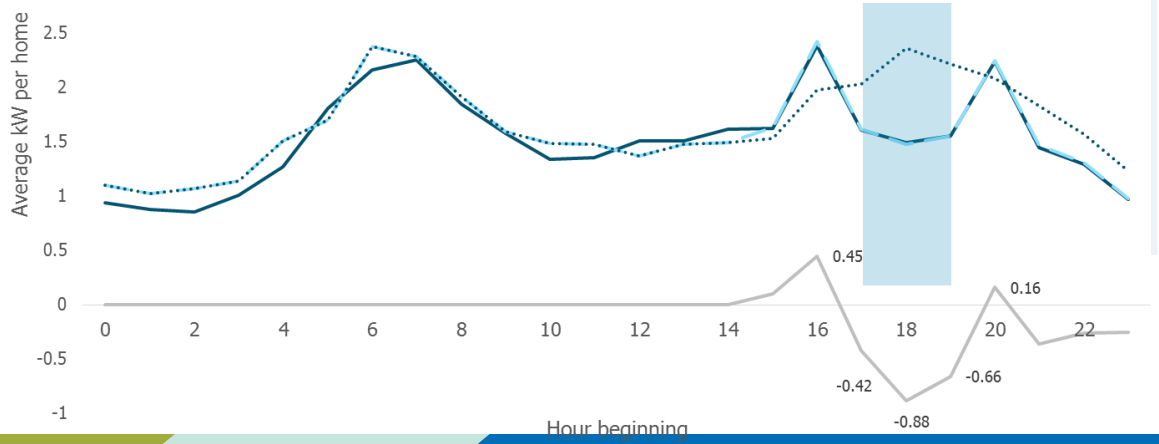
- Currently in third season
- Enrollment at ~16,000
- Large test of 12 different rate combinations



Rush Hour Rewards

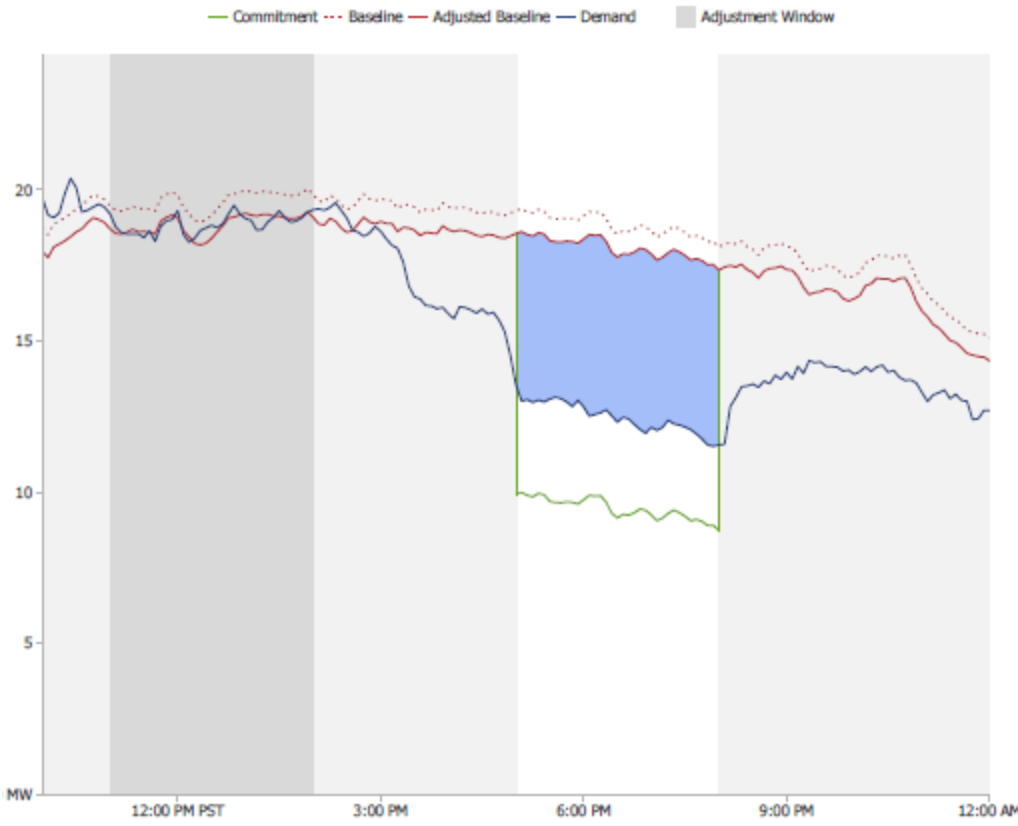
- Currently in fourth season
- Enrollment: ~3,800
- Load reductions:
  - Summer: 0.8 kw/customer
  - Winter: 0.7 kw/customer





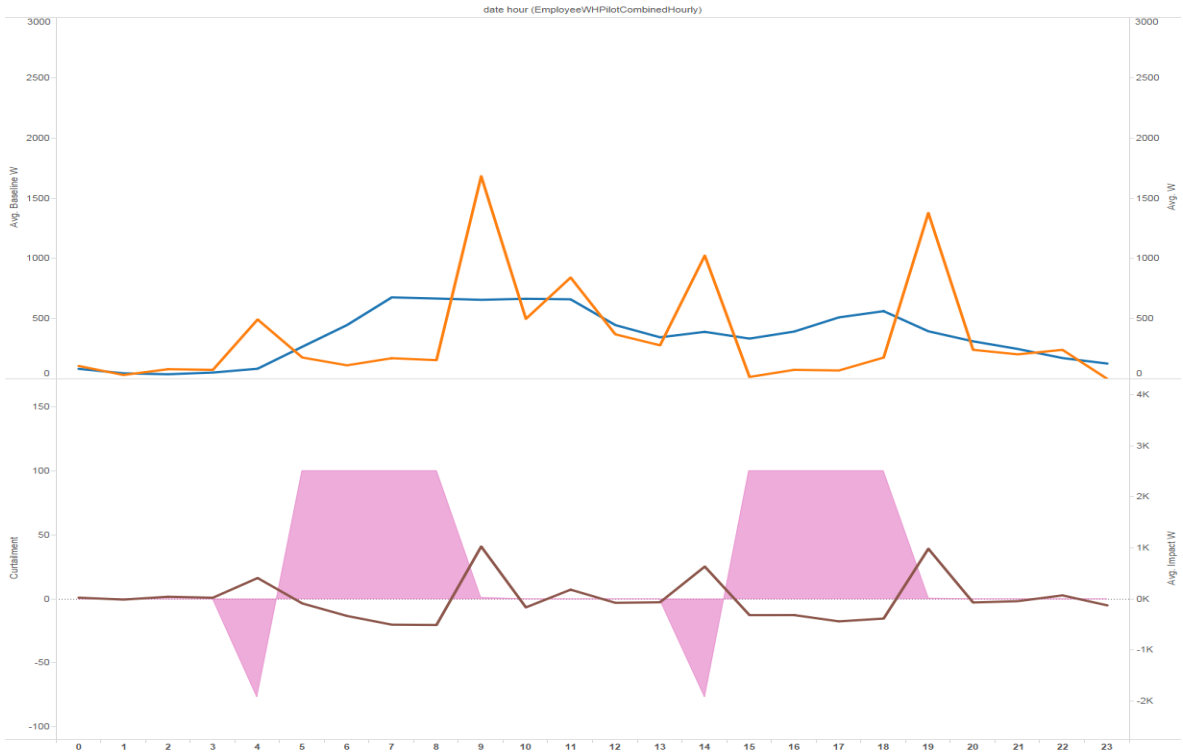
Business Demand Response

- Energy Partner
  - 45 participants nominated at total of ~8.3 MW
- Schedule 77
  - 1 participant nominated at 1.8 MW



Water Heater Market Transformation

- Testing standardized communications
  - Employee pilot
  - BPA regional demonstration



Electric Vehicle Charging

- Testing direct load control with workplace and employee home charging
- Low customer impact
- Highly controllable load

Upcoming Programs: Business

- Portfolio refresh and expansion
- Diversify offerings
- Reach more small/medium customers
- Turnkey measures

C&I DR Portfolio Objectives

Demand Types	PGE is looking for firm and non-firm DR from the business segment. These may be automated and non-automated. Preference will be given to firm and automated. **Fossil-fuel generation will not be accepted in the program.**
Start of 2021 Total	27 MW (average of summer and winter)
Notifications	18 hour, 4 hour, 1 hour, 30 minute, or automatic (within-minute)
Availability Windows	Winter, Early Peak 7am-11am Winter, Late Peak 4pm-10pm Winter, Off Peak All else Summer, Early Peak 11am-4pm Summer, Late Peak 4pm-9pm Summer, Off Peak All else Shoulder, Early Peak 7am-11am Shoulder, Late Peak 4pm-10pm Shoulder, Off Peak All else
Duration	15 min, 1 hour, 3 hour, 5 hours
Total Hours/Year	Minimum: 6 hrs./yr., Maximum: 1500 hrs./yr.
Seasons	Winter: November – February Summer: June – September Shoulder: March-May, October

Upcoming Programs: Residential

- Multifamily Water Heater Direct Load Control
- Bring-Your-Own-Thermostat expansion
- Smart Charging Pilots

DR/DER Testbed

- Geographically targeted deployment
- Measure maximum achievable potential
- Identify system and T&D benefits
- Test relationship between pricing and load control
- Compare single family, multifamily, new construction

Challenges for DR in the Region

Challenges for DR in NW

- Low awareness
- Summer vs winter programs
- Exclusion of fossil fuel generators
- Direct access
- Organizational missions

Demand Response and Energy Efficiency

General Benefits/Synergies

- Value proposition
- Messaging
- Energy Information
- Engagement

Shifting Paradigms

- Demand response programs drive awareness
- Dynamic rates change the nature of bill savings
- Paradigm moves toward ongoing relationships
- Coordination between organizations critical
- Missions evolving at regional organizations

Questions/Discussion

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