

Implementation Status of Fukushima Lessons Learned at Duke Energy

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Key Messages

- Duke Energy sites are prepared to mitigate a Fukushima-type event
- Substantial resources allocated to ensure timely and comprehensive implementation of Fukushima response actions
- Duke Energy is committed to completion of remaining Fukushima response actions and implementation of Mitigation Beyond Design Basis Events (MBDBE) rule

Fukushima Response Status

FLEX and Spent Fuel Pool Level Instrumentation (SFPLI)
Orders fully implemented

- Significant improvement in safety
- Maintenance and testing programs established for FLEX equipment and SFPLI
- Mitigating strategies integrated into operator training programs
- Investment of \$432 million and 3.3 million work-hours

Fukushima Response Status

Brunswick is on track to implement Hardened Vent Order

- Wetwell venting system installation to be completed in Unit 2 by March 2017 and in Unit 1 by March 2018
- Severe accident water management strategies for both units completed by March 2019
- Significant improvement in safety when completed
- Investment of \$25 million and 161 thousand work-hours

Fukushima Response Status



- ✓ Completed modifications to comply with FLEX and SFPLI Orders

- ✓ Purchased equipment to ensure site can withstand ELAP and LUHS events

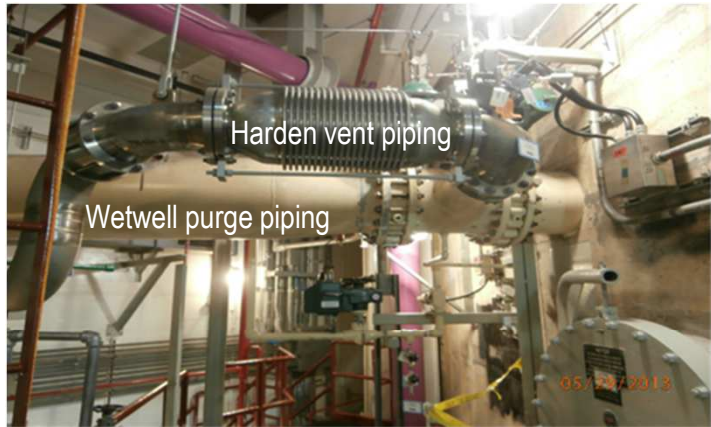


- ✓ Established two National SAFER Response Centers



Fukushima Response Status

- ✓ Validated strategies via analysis and on-site personnel exercises



- ✓ Created and updated procedures



- ✓ Trained Operations, Maintenance, Radiation Protection, Engineering and Emergency Response Organization personnel

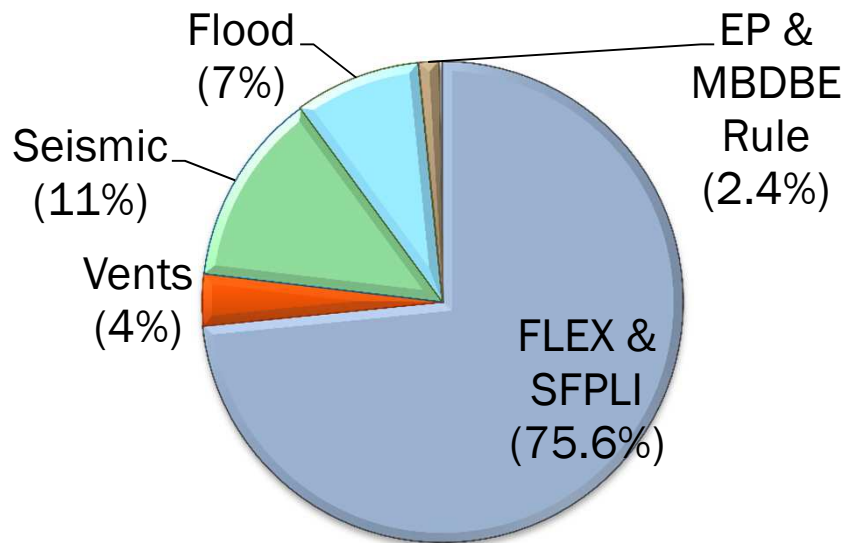
Fukushima Response Status

Key Information Requests and Evaluations	Status
Emergency Preparedness	Complete
Seismic and Flood Walkdowns	Complete
Seismic and Flood Reevaluation	Complete
Additional Seismic Evaluations, Including MSA	On Schedule – 2017
Seismic Probabilistic Risk Assessment, includes MSA for Oconee and Robinson	On Schedule – March 2019
Flood MSA	On Schedule – 2018
Flood Focused Evaluations/Integrated Assessment	On Schedule – 2018

- Investment of \$99 million and 750 thousand work-hours

Summary

INVESTMENT BREAKDOWN



Total Investment - \$570 million*

* excluding MSA mods

- Significant reduction in overall plant risk
- Industry exploring ways to leverage FLEX equipment
- For the final chapter, Duke Energy is committed to completing MBDBE Rule implementation

Acronyms

CAT	Caterpillar
ELAP	Extended Loss of Alternating-Current Power
EP	Emergency Preparedness
FLEX	Diverse and flexible coping strategies
LUHS	Loss of Ultimate Heat Sink
MBDBE	Mitigation Beyond-Design-Basis Events
MSA	Mitigating Strategies Assessment
NSRC	National SAFER Response Center
SAFER	Strategic Alliance for FLEX Emergency Response
SFPLI	Spent Fuel Pool Level Instrumentation