

# Potential Augmented Approach for Recommendation 2.1 Seismic Evaluations

November 14, 2012

# Potential Augmented Approach

## Key Concepts

- Develop new hazard curves and Ground Motion Response Spectra (GMRS) as requested in 50.54(f) letter
- Perform an additional interim evaluation (limited scope, simplified deterministic evaluation) and make appropriate plant modifications by 2016\*
- Perform SPRA or enhanced SMA, high frequency confirmation, and spent fuel pool evaluation as needed based on comparison of GMRS to screening criteria as requested in the 50.54(f) letter but on a longer schedule

 extend longer if outages are required.

# Potential Augmented Approach Schedule for Interim Evaluation and Actions

Activity	CEUS Plants	WUS Plants
Calculate GMRS	September 2013	March 2015
Perform interim evaluation	September 2014	January 2016
Complete mods not requiring an outage	December 2016	June 2018
Complete mods requiring an outage	Within 2 outages of December 2014	Within 2 outages of January 2016

# Interim Evaluation and Actions

## Scope of Equipment

- Include a subset of installed plant equipment needed for FLEX
  - Exact list will depend on plant-specific integrated plan for FLEX (due to NRC in February 2013)
  - Will typically include tanks and mechanical and electrical equipment
- Structures, other SSCs (e.g., piping, cable trays, NSSS), and two-over-one interactions would be addressed in the SPRAs or enhanced SMAs

# Interim Evaluation and Actions

## Process and Success Criteria

- If GMRS > SSE between 1 and 10 Hz\*, develop a Review Level Ground Motion (RLGM) by scaling up the SSE so that it envelopes the GMRS between 1 and 10 Hz (not to exceed 2 x SSE or 0.75g PGA)
- Derive in-structure motion using existing SSE-based ISRS scaled up consistent with the RLGM
- Perform HCLPF evaluations using guidance such as EPRI NP-6041-SLR1 and EPRI TR-103959
- For equipment whose HCLPF < RLGM, implement plant modifications to achieve a HCLPF  $\geq$  RLGM

\*Consistent with SPID Section 3.2.1

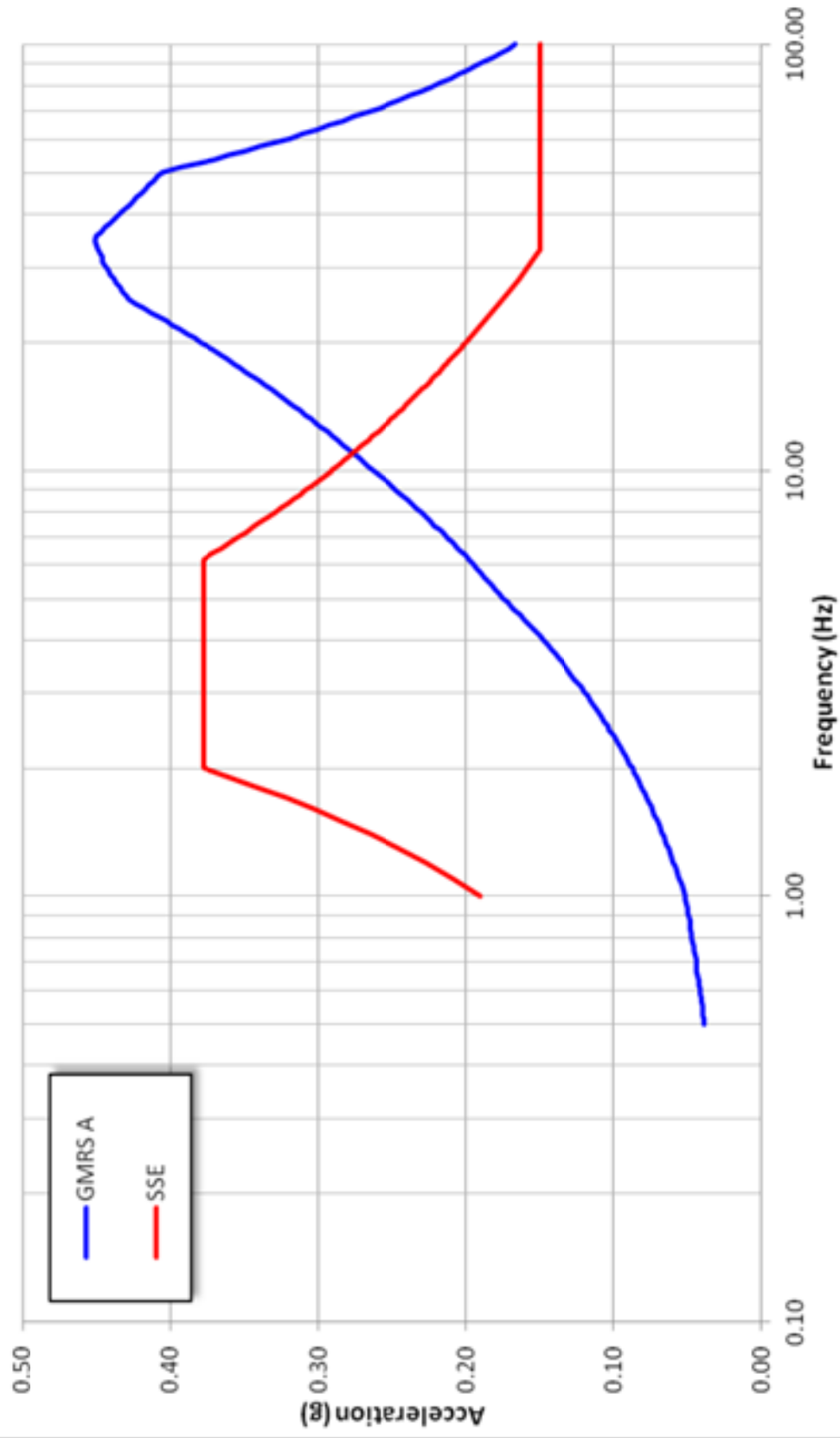
# **\*Screening Consistent with SPID**

## **Section 3.2.1**

- For low seismic hazard sites with exceedances only below 2.5 Hz, evaluate low frequency sensitive SSCs using GMRS.
- For narrow band exceedances (as defined in 3.2.1.2), no further evaluation is necessary.

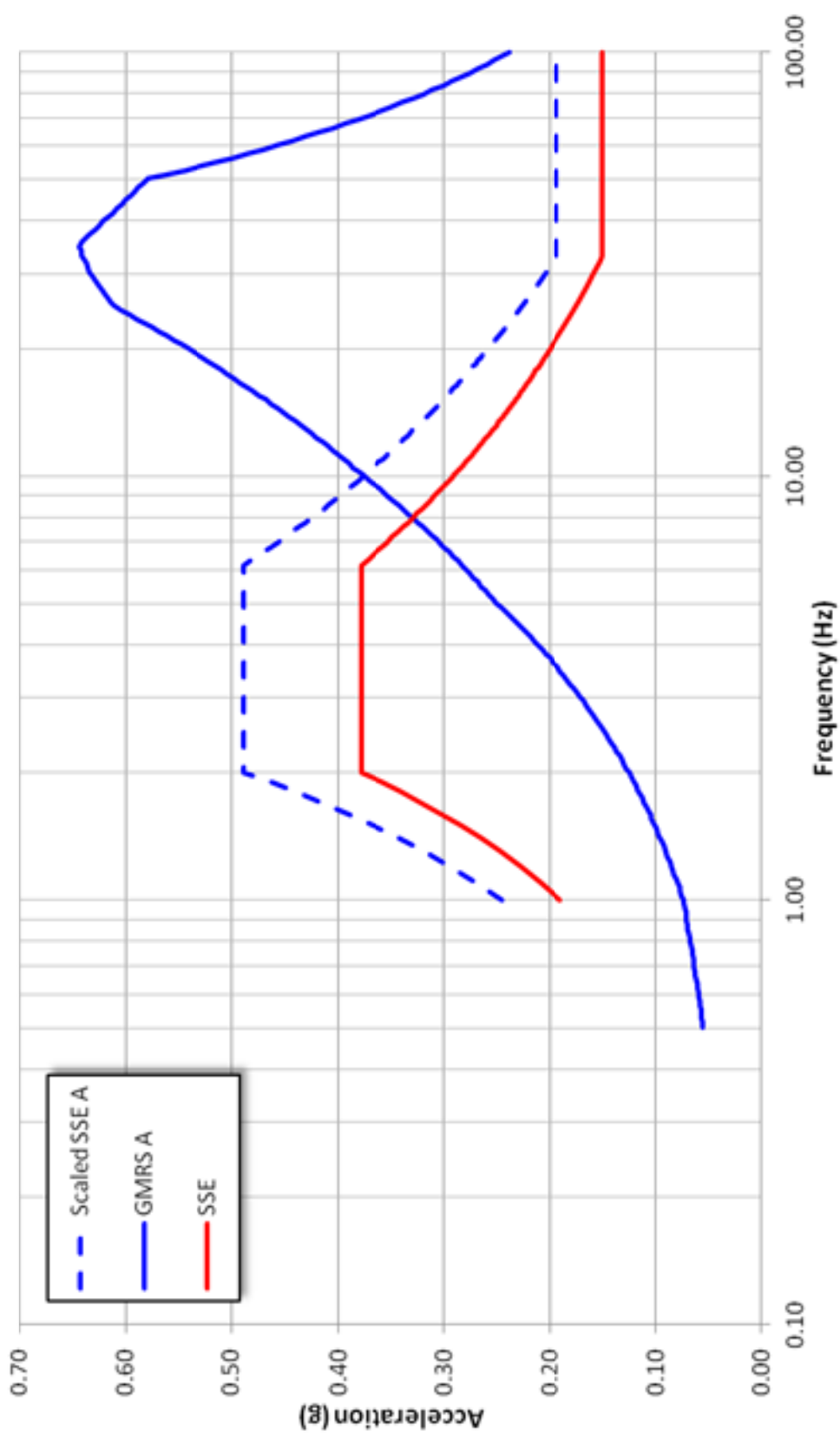
# Example

Scenario 1: RLGGM = SSE



# Example

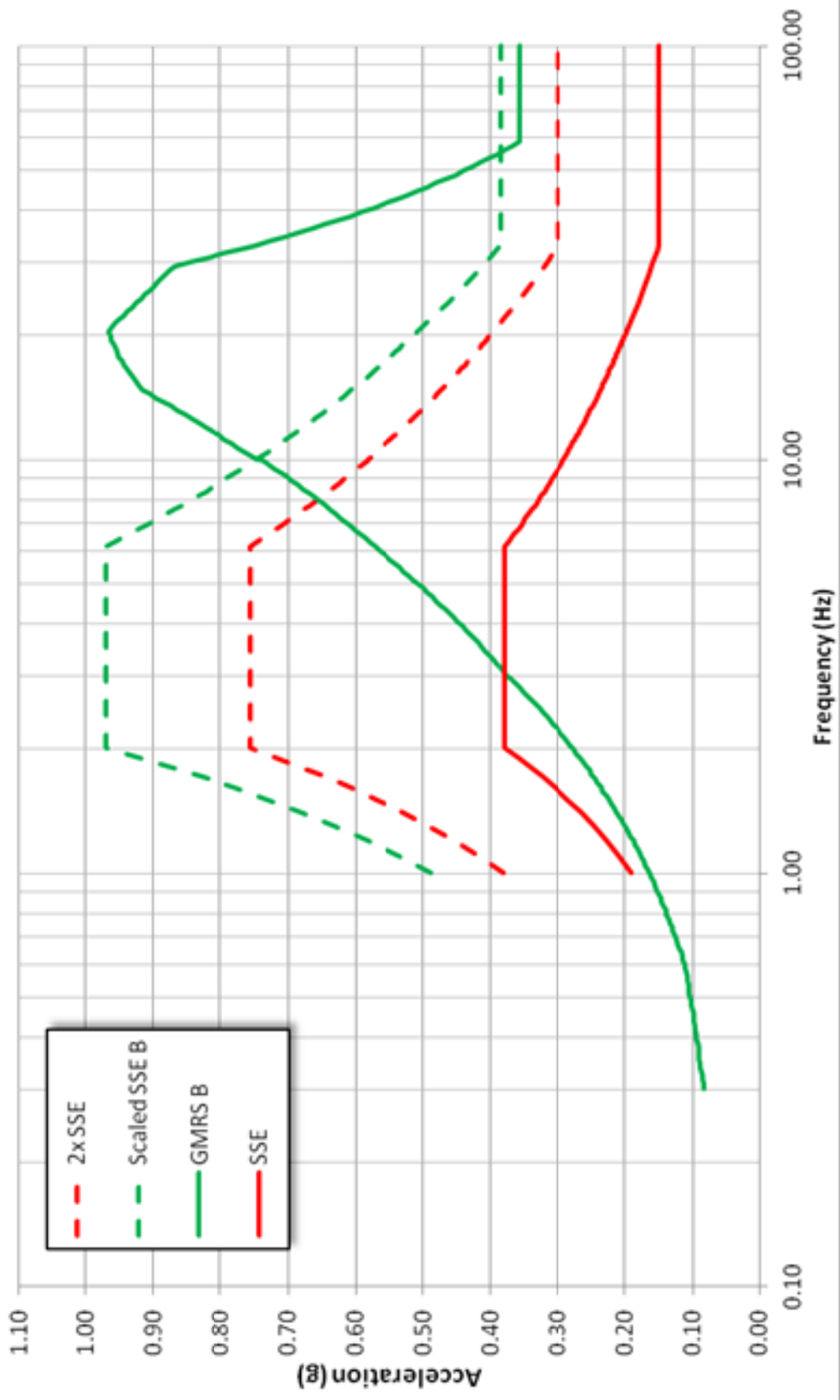
Scenario 2: RLGM = SSE Scaled Based On GMRS





# Example

Scenario 3: RLGGM = 2x SSE



# Conceptual Timeline

## Proposed Augmented Approach for NITF 2.1 (Seismic)

