**Risk Assessment Action 2 Worksheet: Hazards and Threats**

Worksheet Last Updated By: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Worksheet Last Updated On: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grouped Hazards and Threats: Hazards and threats with the potential to impact primary energy and water systems

Consider the site’s historical loss of primary energy or water supply—on a general scale, with what frequency would you expect to lose primary energy or water supply going forward across various outage durations? Record answers in the table below.

Make sure to account for fragility or condition of the primary energy and water supply infrastructure (especially offsite infrastructure) when considering how frequently your site would expect to see an outage (and for how long).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Primary Supply System Lost** | **Outage Duration** | **Almost Certain** | **Likely** | **Anticipated** | **Unlikely** | **Extremely Unlikely** |
| *Average 3 times in a year, almost certain to occur* | *Average frequency of once a year, likely to occur in a year* | *1/10 years; 10% annual probability* | *1/100 years; 1% annual probability* | *1/1,000 years; 0.1% annual probability* |
| Energy--Electric Power | 1 hour |  |  |  |  |  |
| 1 day |  |  |  |  |  |
| 1 week |  |  |  |  |  |
| 1 month |  |  |  |  |  |
| 6 months |  |  |  |  |  |
| Energy – Natural Gas Power | 1 hour |  |  |  |  |  |
| 1 day |  |  |  |  |  |
| 1 week |  |  |  |  |  |
| 1 month |  |  |  |  |  |
| 6 months |  |  |  |  |  |
| Water | 1 hour |  |  |  |  |  |
| 1 day |  |  |  |  |  |
| 1 week |  |  |  |  |  |
| 1 month |  |  |  |  |  |
| 6 months |  |  |  |  |  |

For those working offline, within the Technical Resilience Navigator (TRN) Risk Assessment Excel model, these values are listed in **Tab 3A** and used to generate risk scenarios in **Tab 5**. For those working online, values would be directly entered into the online worksheet.

## Dual-Impact Hazards and Threats: Hazards and Threats With the Potential to Impact Onsite Redundant Energy and Water Systems

Review previous assessments and plans identified in the Site-Level Planning module and Baseline Development module for existing hazard and threat data. Consider which of the list of hazards and threats below could **both** cause a disruption to primary energy or water supply system resources **and** impact current or prospective onsite first and second redundant systems or service (at a sufficient level of severity). If the site has known hazards and threats with the potential to impact onsite redundant systems from existing site plans or previous assessments not included in this list, add them below.

Review each hazard and threat for its applicability to your site. Be sure to include all hazards and threats that have the potential to impact onsite redundant systems (i.e., dual-impact hazards and threats). Action 3 will address the efficacy of the design basis of redundant systems to withstand the specified hazard or threat. For each hazard and threat, mark how long the outage duration of primary supply system resources would be if that hazard or threat of sufficient severity was realized. Also note how frequently you would expect that dual-impact hazard or threat to occur.

If frequency of occurrence for each identified hazard or threat is not known, discuss with subject matter experts and refer to the **TRN Resource: Outage Frequencies**.

**Energy**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Potential Dual-Impact Hazards and Threats** | **If realized, would performance of any onsite redundant system be affected?**  *(Yes/No)* | **At what threshold would you be concerned about redundant system performance?** | **Outage duration of offsite resource at or above threshold**  *(1 Hour; 1 Day, 1 Week, 1 Month, 6 Months)* | **Expected frequency of hazard occurrence at threshold**  *(Almost Certain, Likely, Anticipated, Unlikely, Extremely Unlikely)* |
| Seismic |  |  |  |  |
| Hazards and Threats Resulting in Flooding |  |  |  |  |
| High Winds |  |  |  |  |
| Snow/Ice |  |  |  |  |
| Wildfires |  |  |  |  |
| Extreme Temperatures |  |  |  |  |
| Cyberattack |  |  |  |  |
| Physical Attack |  |  |  |  |
| Drought |  |  |  |  |
|  |  |  |  |  |

**Water**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Potential Dual-Impact Hazards and Threats** | **If realized, would performance of any onsite redundant system be affected?**  *(Yes/No)* | **At what threshold would you be concerned about redundant system performance?** | **Outage duration of offsite resource at or above threshold**  *(1 Hour; 1 Day, 1 Week, 1 Month, 6 Months)* | **Expected frequency of hazard occurrence at threshold**  *(Almost Certain, Likely, Anticipated, Unlikely, Extremely Unlikely)* |
| Seismic |  |  |  |  |
| Hazards Resulting in Flooding |  |  |  |  |
| High Winds |  |  |  |  |
| Snow/Ice |  |  |  |  |
| Wildfires |  |  |  |  |
| Extreme Temperatures |  |  |  |  |
| Cyberattack |  |  |  |  |
| Physical Attack |  |  |  |  |
| Drought |  |  |  |  |
|  |  |  |  |  |

Review the tables above; for potential dual-impact hazards or threats that were applicable to your site and above a specific threshold could impact redundant systems, consolidate in the table below with one line for energy and one line for water as necessary. Be sure to include that threshold value in the Hazard Description.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hazard and Threat Description** | **Primary Supply System Resource Lost**  *(Energy/Water)* | **Outage Duration of Primary Supply System Resource**  *(1 Hour; 1 Day, 1 Week, 1 Month, 6 Months)* | **Expected Frequency of Hazard**  *(Almost Certain, Likely, Anticipated, Unlikely, Extremely Unlikely)* |
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|  |  |  |  |

For those working offline, this table will be used as an input into **Tab 3B** of the TRN Risk Assessment Excel model and also to generate risk scenarios in **Tab 5**. For those working online, this data will be used to develop risk scenarios in Action 3.