MGRA DATA REQUEST
MGRA-SDG&E-DR-03
SDG&E 2016 GRC – A.14-11-003
SDG&E RESPONSE
DATE RECEIVED: MARCH 18, 2015
DATE RESPONDED: MARCH 31, 2015

MGRA-64 For the data on improvements, rebuild and maintenance given in the responses to MGRA-54 and MGRA-55, please provide an additional column that lists the geographically nearest RAWS and SDG&E weather station for each of the circuits listed in the table. Response format should be Excel spreadsheet.

SDG&E Response:

Please see the response to MGRA-66.

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MGRA-65 Please respond to the request for outage data given in MGRA-57 and MGRA-58 with the following changes and caveats. 1) Data should be approximately equivalent to that provided in A.08-12-021. To the extent that outage cause data is available it should be provided. 2) A full listing of outage data may be substituted for the restricted calendar dates listed in MGRA-57 and MGRA-58 if this would be easier to provide. 3) Outage data should include an additional column containing the affected circuit number in order to allow cross-referencing to the maintenance data. 4) Data does not have to include wind speed data, but should specify the nearest RAWS and SDG&E weather stations, at the least for all outage data falling within the time windows specified in MGRA-57 (high wind) and MGRA-58 (control).

SDG&E Response:

Please see the response to MGRA-66.

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MGRA-66 To the extent that information provided in MGRA-64 and MGRA-65 may be redundant in that they both provide a mapping between circuit and nearest associated weather station, SDG&E may at its discretion provide a response to this request listing circuit numbers for all circuits mentioned in responses to MGRA-64 and MGRA-65 (those within specified calendar date windows) cross referenced with nearest RAWS and SDG&E weather stations. Response to this request would substitute for the weather station column data in MGRA-64 and MGRA-65.

SDG&E Response:

Please see the accompanying document "MGRA-DR3-66.xlsx".

SDG&E is providing a Microsoft Excel spreadsheet that contains outages from 2005 through 2014 that occurred on distribution circuits that were included in the response to MGRA-54 and MGRA-55. At SDG&E's discretion certain outages were not included due to not being relevant to the data request - such as underground outages, transmission based load curtailment, etc. The outages that are provided likely have differing levels of relationship to wind and weather.

Included in the data are the following fields, which will be defined below:

- Occurrence: Date and time of start of outage
- Circuit: Identifier of circuit. All numerical circuits are 12kV and those with alphanumeric IDs are 4kV. Note that circuit configurations change therefore outages occurring today at the exact same location may affect a different circuit. Data is grouped by circuit, and sorted by date.
- Cause Category: a general category used internally for analysis.
- Cause Description: a more specific cause grouping than Cause Category. Due to the nature of outages, these descriptions may be a grouping of different specific causes.
- Control Date: Is a value of "1" if outage occurred during the control dates of 7/1 and 7/15 of any year. Is a value of "0" in all other cases.
- Station Code: The weather station code. These codes are used in publicly available websites. If necessary, please request instructions on how to use. Important: The weather stations provided are geographically near to the location of the outage. There is no guarantee that the weather station provided is the nearest weather station, nor the most appropriate to use for determining weather conditions at specific locations. Per SDG&E meteorology: "The nearest weather station to a given structure may not be the most representative. Take for example a distribution pole on a mountain ridgeline. In this example, a ridgetop weather station 15 miles away may be more representative than a mid-slope weather station 2 miles away. Furthermore, wind speeds can and oftentimes do vary significantly across short distances during periods of extreme weather due to the region's complex terrain. Lastly, wind speeds can be reduced or enhanced by the

Response to MGRA 66 (Continued)

presence of obstructions (buildings, trees, poles, etc.) when upwind of the weather station or pole in question." Additionally, note that it is possible that the weather station

provided did not exist when the outage occurred. The reason is that most of the SDG&E sites have been constructed in the past few years, whereas the outage data provided goes back 10 years. Furthermore, when analyzing causality of outages from wind, bear in mind that an outage may not always occur during a time period when wind is increasing – the actual outage could occur after a period of time from the strongest wind. In other words, a failure that occurred when winds were measured at 10 MPH may have actually started to fail when the winds were much stronger.

Regarding the hardening of the SDG&E electrical system, please note the following pieces of information: 1) SDG&E has made no assessment whether the facilities involved in the outage were hardened nor whether they later became hardened after the outage. 2) Not all hardening endeavors are the same nor will each endeavor have similar results to reliability/safety, 3) When analyzing failures of equipment it is important to understand the lifetime weather that each pole has experienced. For example, consider a tree branch that causes an outage. A branch contacting wires and causing an outage during a 30 MPH wind may be a sign of (a) certain failure whenever wind reaches 30 MPH, or (b) an exceedingly rare failure given a multitude of 30 MPH winds at those wires. Outage event data alone is not sufficient to distinguish between those two possibilities.