

APPENDIX I:
GEOGRAPHIC INFORMATION SYSTEM DATA

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A geographic information system (GIS) was used to support the mapping and location-specific analyses in the West-wide Energy Corridor (WWEC) Programmatic Environmental Impact Statement (PEIS). GIS databases contain spatial data including imagery, map graphics, and associated tabular data; and GIS software provides the capabilities to store, process, analyze, model, and visualize the spatial data.

The following are important facets of the GIS used in the project and the maps derived from it:

- **Map scale** is the ratio of the distance on a map to the distance it represents on the ground. Large scale maps depict ground features closer to their actual size and are limited in the extent that can be covered on a page. Linear and point objects depicted on small scale maps typically appear out of proportion to their true sizes. Given the extent of the 11 western states, widths of linear features such as energy corridors usually cannot be shown accurately and remain visible on WWEC maps. The map lines exaggerate the corridor widths. Conversely, it would take a prohibitive number of maps to show corridor widths to scale for the entire project region.
- **Data layer scale** is another scaling consideration when using a GIS database. Each thematic category in the database, such as roads, counties, or pipelines, is usually stored and maintained as a separate layer. Layers are produced at a scale that depends on the source information and the purpose of the layer, and some layers are compilations of data from different source scales. Since a map view in a

GIS can be zoomed to any scale, layers can be viewed at scales larger than the scale they were intended to accommodate or combined with layers at different source scales. This can result in a lack of detail on the map and inaccurate locations of features in relation to one another.

- **Data quality and availability** limit some of the information in the GIS, especially a GIS having the diverse set of themes and the large spatial extent needed for the WWEC PEIS. Efforts have been made to gather and use the most complete, current, and comprehensive GIS data available for the project area; nevertheless, in many cases there were limits to the quality, completeness, spatial extent, and temporal currency of available data. As in any product, the quality of GIS data must be evaluated and understood in order to draw appropriate conclusions.
- **Metadata** is information that describes details about data, providing a text description, the purpose of the data, publication date, source material, content, scale, table structure, and many other elements necessary or helpful in understanding a data layer. Not all available GIS data has metadata.

Table I¹ summarizes some of the more important GIS data used in the PEIS, and gives an indication of the diverse sources and levels of quality of the best available data. For the

¹ Shaded text indicates portions of the document that underwent revision between the draft and the final PEIS in response to comments received during the public comment period as well as additional information provided by local federal land managers and resource specialists.

purposes of this summary, quality relates mostly to appropriate data layer scale as described in the metadata. GIS data for which no metadata are available have been assigned a quality description based on experience working with the data in the context of this project. The quality terms used are defined as follows:

- *Small scale:* The data was created to provide a broad overview that could encompass several states (scales smaller than 1:3,000,000).
- *Medium scale:* The data was created to map regional areas such as large parts of individual states (scales between 1:3,000,000 and 1:1,000,000).

- *Large scale:* The data was created to map areas that could encompass several counties or a national forest (scales between 1:1,000,000 and 1:500,000).
- *Local scale:* The data was created to map areas generally smaller than a county or a national forest (scales larger than 1:500,000).

Note the wide range of scales of local-scale maps. Assignment of this quality term does not necessarily denote the highly detailed data created specifically for very large scale maps, such as the 1:24,000 topographic quadrangle maps produced by the U.S. Geological Survey (USGS).

TABLE I Characteristics of GIS Data Used in the WVEC PEIS

Data Description	Source	Data Quality
1 Kilometer Digital Elevation Model	Environmental Systems Research Institute	Medium Scale
1 Kilometer Shaded Relief	Environmental Systems Research Institute	Medium Scale
30 Meter Digital Elevation Model	United States Geological Survey	Local Scale
30 Meter Shaded Relief	Derived from 30 Meter Digital Elevation Model	Local Scale
Aquifers	National Atlas of the United States	Medium Scale
Areas of Critical Environmental Concern	Bureau of Land Management	Large Scale
BLM Field Office Boundaries	Compiled from data received by the Bureau of Land Management	Medium Scale
Boundaries of existing BLM land use plans	Bureau of Land Management	Medium Scale
Boundaries of future BLM land use plans	Bureau of Land Management	Medium Scale
Costly landslide events	National Atlas of the United States	Medium Scale
Costly regional landslide events	National Atlas of the United States	Medium Scale
Critical habitat for flora and fauna	U.S. Fish and Wildlife Service	Large Scale
DOD installations and ranges	Department of Defense	Local Scale
Earthquakes	National Atlas of the United States	Medium Scale
Fault lines	National Atlas of the United States	Local Scale
Federal ownership	Compiled from data received by the Bureau of Land Management in consultation with the Land Resources Project Office	Medium Scale
FEMA Q3 Flood Data	U.S. Federal Emergency Management Agency	Local Scale
Flow characteristics at USGS stream gauges	United States Geological Survey	Local Scale
Generalized geologic regions	United States Geological Survey	Medium Scale
Instrument Military Training Routes	Department of Defense	Local Scale
Karst areas	National Atlas of the United States	Small Scale
Lakes, dry lakes, and reservoirs	National Atlas of the United States	Medium Scale
Landslides	National Atlas of the United States	Small Scale
Level III Ecoregions	National Atlas of the United States	Small Scale
Level IV Ecoregions	Environmental Protection Agency	Local Scale
Low-Level Military Training Routes	Department of Defense	Local Scale
Military Training Routes	Department of Defense	Local Scale
Military Training Routes with floors under 1,000 feet above ground level and slow routes under 1,500 feet above ground level	Department of Defense	Local Scale
National Historic Landmarks	Compiled from data received from the National Registration Information System in consultation with the National Park Service	Local Scale
National Monuments	Compiled from BLM, USGS, and USFS sources	Medium Scale
National Natural Landmarks	National Park Service	Local Scale
National Scenic and Historic Trails	Bureau of Land Management National Landscape Conservation System	Small Scale
Nonattainment areas	State Air Quality Offices	Local Scale

TABLE I (Cont.)

Data Description	Source	Data Quality
NPS Areas under Class I EPA Air Restrictions	National Park Service	Local Scale
Physiographic divisions	United States Geological Survey	Small Scale
Pre-contact Tribal boundaries	Handbook of North American Indians, Smithsonian Institution	Small Scale
Previously proposed energy corridors from other sources	Compiled from various sources	Small Scale
Previously proposed energy corridors from scoping comments	Compiled from various sources	Small Scale
Previously proposed energy corridors from Western Utility Group	Bureau of Land Management	Small Scale
Railroads	Bureau of Transportation Statistics National Transportation Atlas Data	Local Scale
Rivers and streams	National Atlas of the United States	Medium Scale
Roads	Bureau of Transportation Statistics National Transportation Atlas Data	Local Scale
Scenic Highways	Utah State University	Local Scale
Seismic hazard zones	National Atlas of the United States	Medium Scale
Special Use Airspace	Department of Defense	Local Scale
Special Use Airspace with floors under 1,000 feet above ground level	Department of Defense	Local Scale
Surficial geology	United States Geological Survey	Small Scale
USFS Areas under Class I EPA Air Restrictions	National Park Service	Local Scale
USFS Region boundaries	U.S. Forest Service	Small Scale
USFS roadless and specially designated areas	U.S. Forest Service	Local Scale
USFWS areas under Class I EPA air restrictions	National Park Service	Local Scale
Visual Military Training Routes	Department of Defense	Local Scale
Volcanoes	National Atlas of the United States	Medium Scale
Watersheds	National Atlas of the United States	Medium Scale
Wild and Scenic Rivers	United States Geological Survey	Medium Scale
Wilderness Areas	National Atlas of the United States	Medium Scale
Wilderness Study Areas	Bureau of Land Management National Landscape Conservation System	Medium Scale