

# RURAL DESERT SOUTHWEST BROWNFIELDS COALITION

## DUCKWATER SHOSHONE RESERVATION RENEWABLE ENERGY RESOURCES

### SOLAR RESOURCE DISCUSSION AND SOURCES

The top left two maps show solar resource potential for Concentrating Solar Power (CSP) and Photovoltaic (PV). CSP uses Direct Normal Irradiance (DNI) data that represents solar radiation received by a surface that is always perpendicular to the sun's rays. PV uses Global Horizontal Irradiance (GHI) data that represents solar radiation received by an untilted horizontal flat panel collector, and includes DNI and Diffuse Horizontal Irradiance (DHI, the solar radiation scattered or diffused by the atmosphere). Solar resource is in units of Annual Average Kilowatt Hours per Meter Squared per Day (kWh/sq m/day) annually averaged for 1998-2016 for nominally 4 sq km surface cells. In Nevada potential solar resource values range 5.0 to 6.5 for CSP/DNI and 4.0 to 6.0 for PV/GHI kWh/sq m/day. The data was developed by the National Renewable Energy Laboratory (NREL, 2018), from the National Solar Radiation Database (NSRDB) Multi-Year Physical Solar Model (PSM v. 3.0.1). Data is available from the NSRDB Data Viewer at <https://maps.nrel.gov/nsrdb-viewer/>. The DNI and GHI values depicted in the two maps have been filtered to show only areas that have a slope of three (3) percent or less.

### WIND RESOURCE DISCUSSION AND SOURCES

The upper right map shows the annual average Wind Resource at 50-meter height above ground surface based upon potential Wind Power Density in W/sq m (watts per meter squared). Wind power is divided into seven classes where class 3 or greater areas are suitable for most utility-scale wind turbine applications, class 2 areas are marginal for utility-scale applications but may be suitable for rural applications, and class 1 areas (not shown) are generally not suitable. This data was developed by AWS TrueWind/NREL (2003), and is available at [http://www.nrel.gov/gis/data\\_wind.html/](http://www.nrel.gov/gis/data_wind.html/).

### GEOTHERMAL RESOURCE DISCUSSION AND SOURCES

The lower left two maps show conventional and unconventional geothermal resource potential. Conventional geothermal resources depend on high temperature hydrothermal fluid circulation that arises from magmatism or other tectonic processes and permeability typically produced by active faulting. USGS (2008) mapped favorability for conventional undiscovered moderate-temperature (90 to 150 degrees C) and high-temperature (greater than 150 degrees C) geothermal resources. In Nevada, potential geothermal resource values range from less than 0.1 to greater than 15.0 measured in Megawatts per kilometer squared (MW/sq km).

Deep Enhanced Geothermal Systems (EGS) are unconventional geothermal resources that require the presence of elevated temperatures at drillable depths (3 to 10 km below ground surface); whereas, the permeability necessary for the circulation of hot water or steam and the recovery of heat for electrical power generation is developed by the engineered augmentation or creation of permeability in place. USGS (2009) mapped favorability classes for EGS where 1 is the most favorable and 5 is the least favorable. These favorability data are available from the NREL Geothermal Prospector at <https://maps.nrel.gov/geothermal-prospector>.

### TRANSMISSION AND LAND STATUS DISCUSSION AND SOURCES

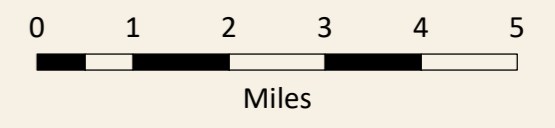
The lower right map shows 2019 BLM land status in background. Federal lands excluded from use typically include Wilderness, Wilderness Study Areas, Forest Service Roadless Areas, Department of Defense and Energy, National Park Service, and Fish and Wildlife Service lands. In the area of the Duckwater Shoshone Reservation only the Fish and Wildlife Service Critical Habitat (updated 19 March 2019) for the threatened Railroad Valley Spring Fish (*Crenichthys nevadae*) is shown in red. Mt. Wheeler Power is the electric utility that services the depicted area of the Duckwater Shoshone Reservation. A singular operational 24.9 kV power line services the area. No substations are in the map area. The closest substation is the 24.9/34.5 kV Currant substation which is located 16 miles south of the Reservation. Transmission facilities are provided for informational purposes and may not be complete.

### OTHER DATA DISCUSSION AND SOURCES

Roads and State/County boundaries are from or modified from US Census TIGER data, 2011. The hillshade data was developed from USGS 3D Elevation Program (3DEP) 1/3 arc-second digital elevation models (DEMs) acquired from The National Map download utility at <https://viewer.nationalmap.gov>.

The maps focus on the Duckwater Shoshone Reservation, one of the seven Rural Desert Southwest Brownfields Coalition (RDSBC) members. The other members are Esmeralda, Lincoln, Mineral, Nye, and White Pine Counties, Nevada and Inyo County, California.

Produced By: TerraSpectra Geomatics  
Date Produced: May 2, 2019  
Grid/Units: UTM, Zone 11, Meters  
Projection: Transverse Mercator  
Datum/Spheroid: NAD83/GRS80



1 inch = 2 miles

