

WECC

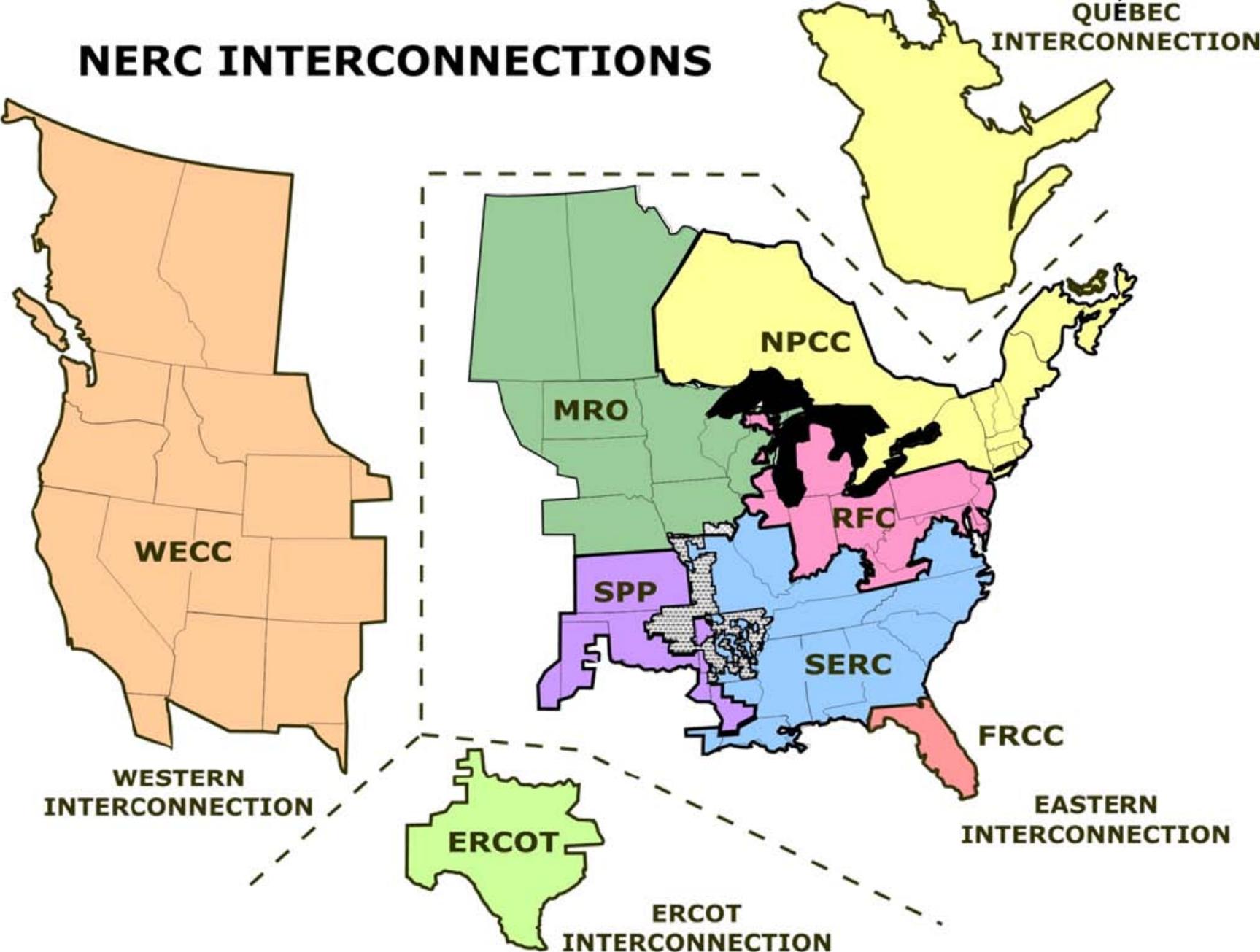
Environmental and Cultural Data Use in Planning

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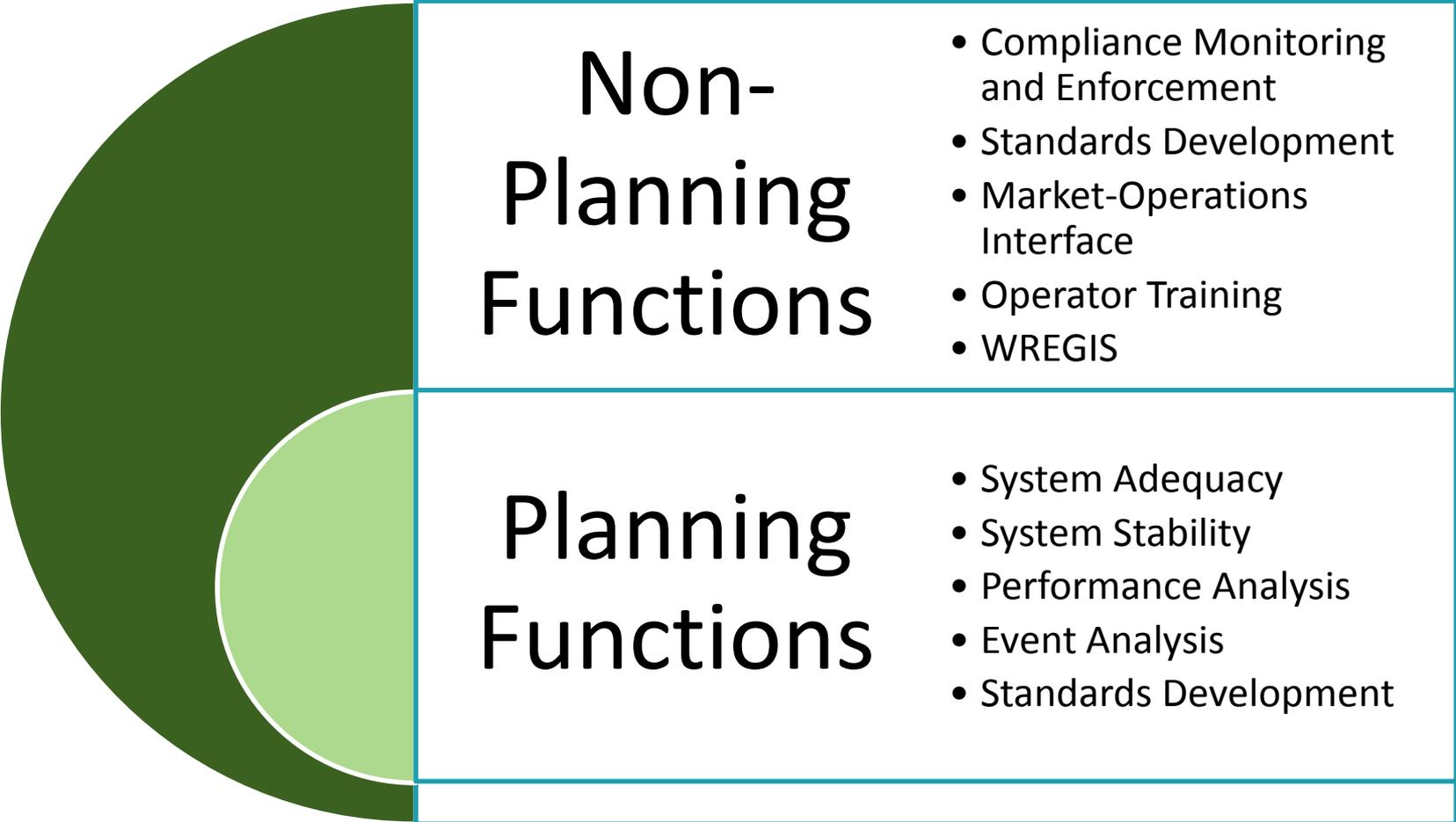
Presentation Overview

- WECC Overview
- Environmental Resource Data
- Cultural Resource Data

NERC INTERCONNECTIONS



WECC Functions



Non-Planning Functions

- Compliance Monitoring and Enforcement
- Standards Development
- Market-Operations Interface
- Operator Training
- WREGIS

Planning Functions

- System Adequacy
- System Stability
- Performance Analysis
- Event Analysis
- Standards Development

Environmental Data Work Group

Environmental Data Work Group (EDWG)

- Formed in June, 2010 as the Environmental Data Task Force (EDTF), now it is the EDWG
- Includes representation by broad stakeholders
- Provides input to transmission expansion planning process

Primary EDWG Products

Preferred Data Sets

- Available
- Reviewed for Quality
- Relevant to Transmission Planning

Risk Classification System

- Four Risk Levels
- Low Risk (1) to Exclusion Area (4)

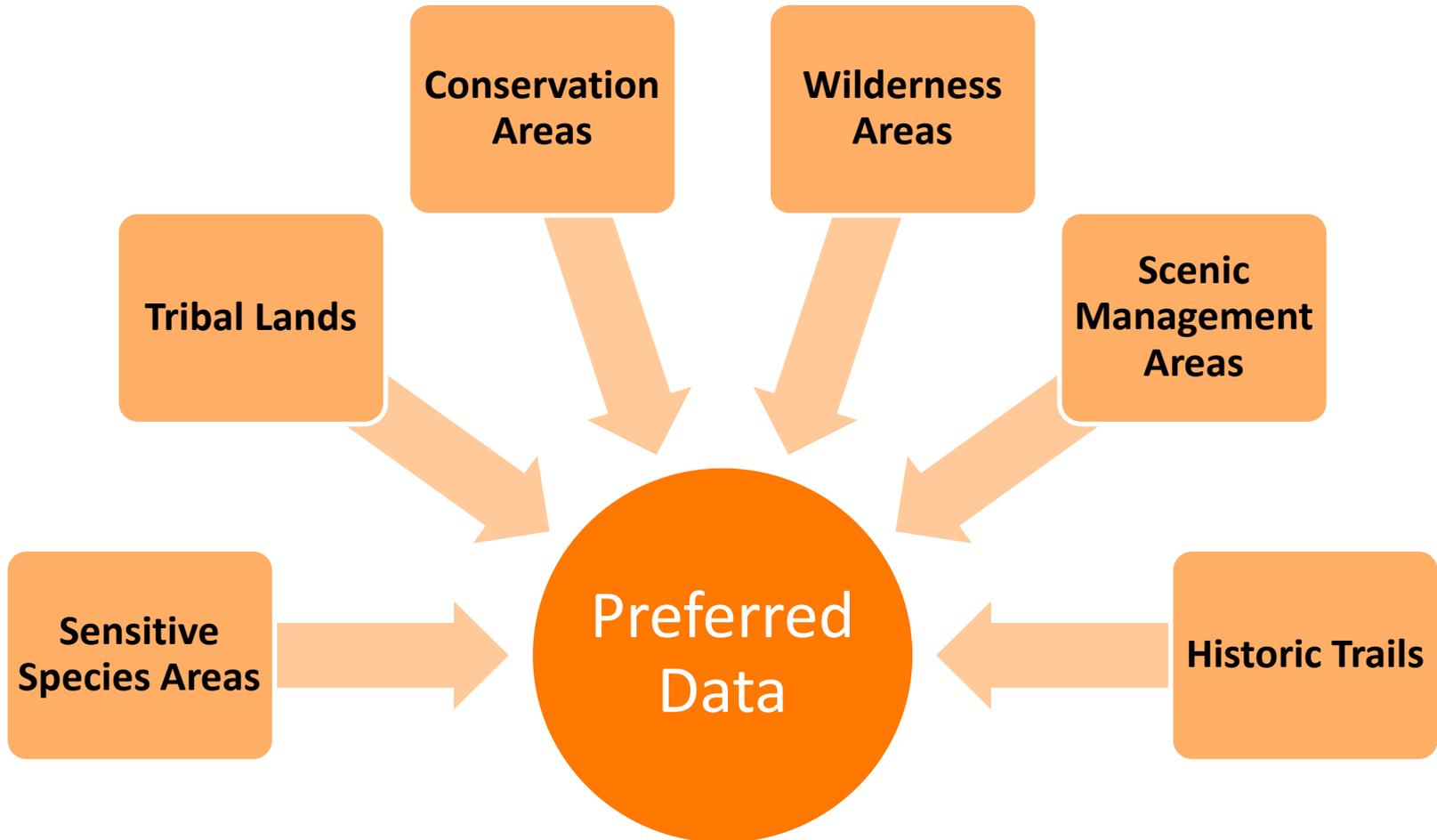
Comparison Methodology

- Compares relative risks of transmission alternatives
- Alternatives identified in long-term study cases
- Available for use outside of WECC

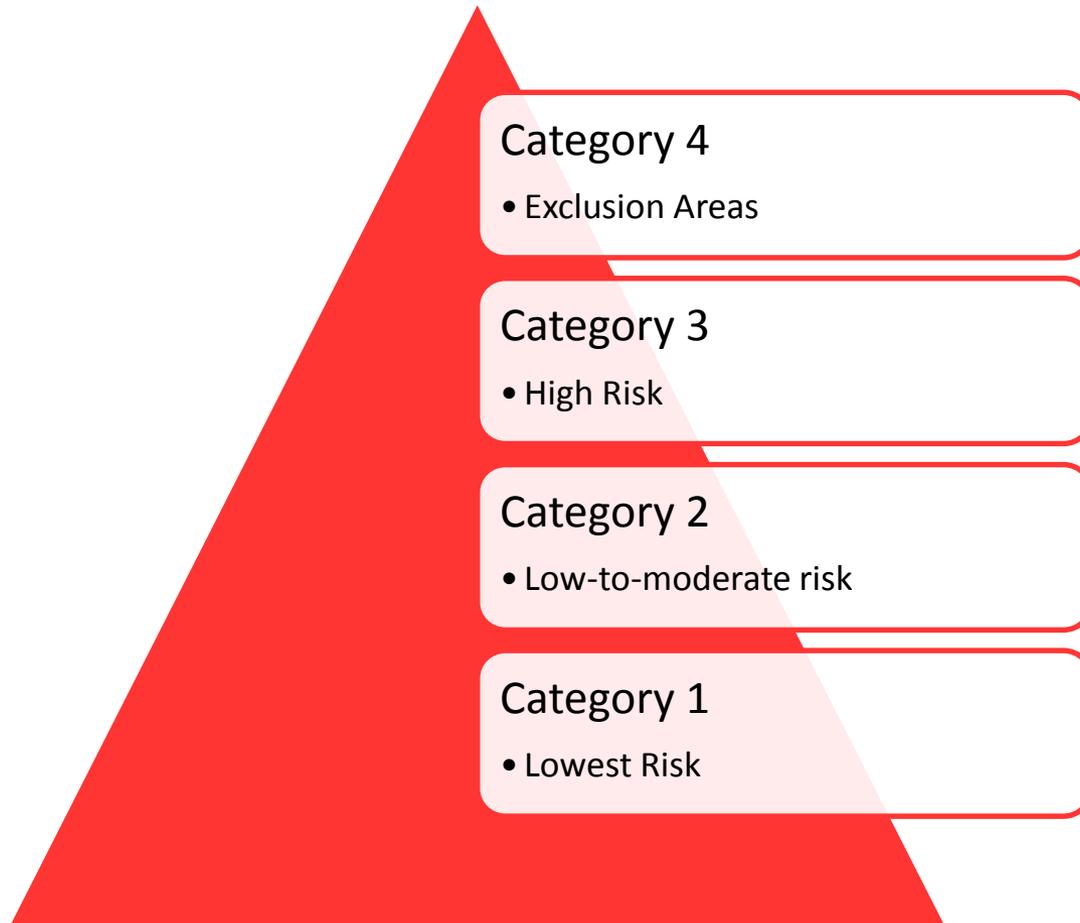
Review of Study Case Results

- Considers “environmental risk contours”
- Also considers cultural risks
- Considers capital costs of “bending lines”

Environmental/Cultural Data (Samples)



Risk Classification



Benefits of Environmental Data

Use of Data at Planning Stage

- Decrease cost and conflict
- Avoid delays

Ensure Data Quality

- Avoid or mitigate risks at planning level

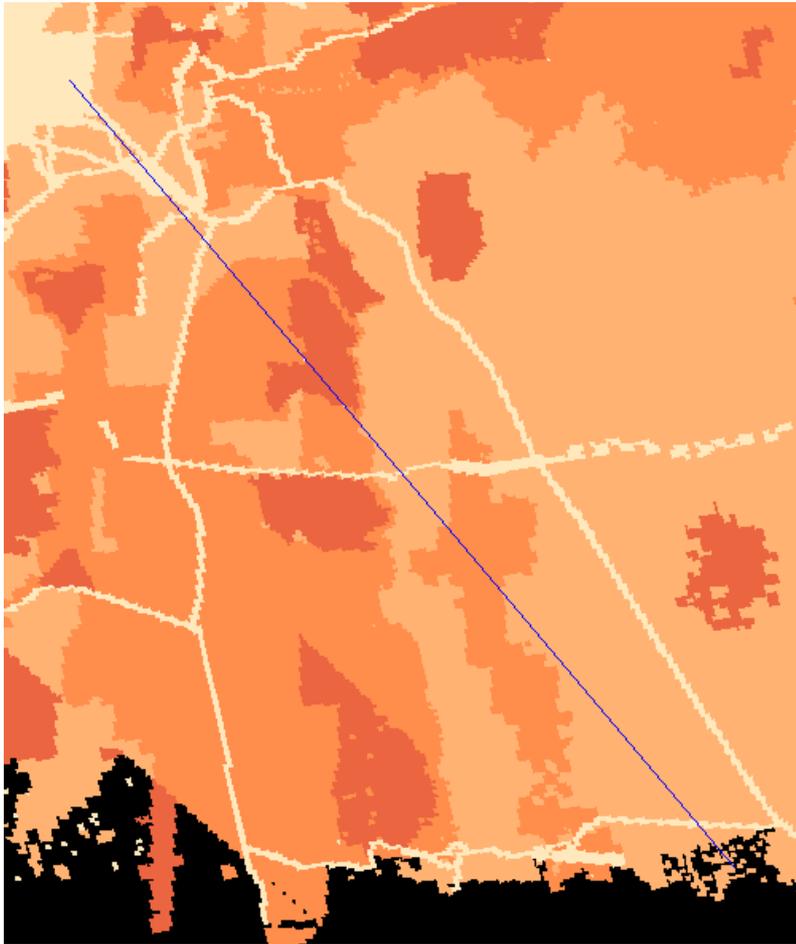
Public Availability of Tools

- Use by federal/state/provincial/regional entities

Example of Use: WECC Long-Term Planning Tool

- Creates transmission expansion options based on study case inputs
 - Loads, resource costs, fuel prices, carbon cost
- Options are “point-to-point”
 - Need to “bend the lines”

Environmental Risk Classes 1-4



- Blue line connects endpoints
- Darker areas = higher risk category

How Can You See the Data?

The screenshot shows the WECC website interface. The main navigation bar includes 'Program Areas', 'Committees', 'Toolbox', 'Library', and 'WECC 101'. The 'Transmission Expansion Planning' section is active, with a sub-section for 'Environmental and Cultural Considerations'. A red arrow points to a green 'LAUNCH DATA VIEWER' button. Below this is a table of datasets.

Environmental and Cultural Considerations

WECC explores ways to transform land, wildlife, cultural, historical, archaeological and water resource data into a form useable in Transmission Expansion Planning. The ability to visualize land data and analyze that data to reveal relationships, patterns and trends is important in determining where to place new transmission. Geographic Information Systems (GIS) data is an input to WECC's Long-Term Planning Tool (LTPT). Environmental, cultural, risk and terrain data are captured in GIS data as inputs to the LTPT. Transmission paths are geospatially optimized within the LTPT. The goal is to minimize the cost and impacts (e.g., environmental, financial) of building new transmission paths.

LAUNCH DATA VIEWER

ENVIRONMENTAL AND CULTURAL DATASETS

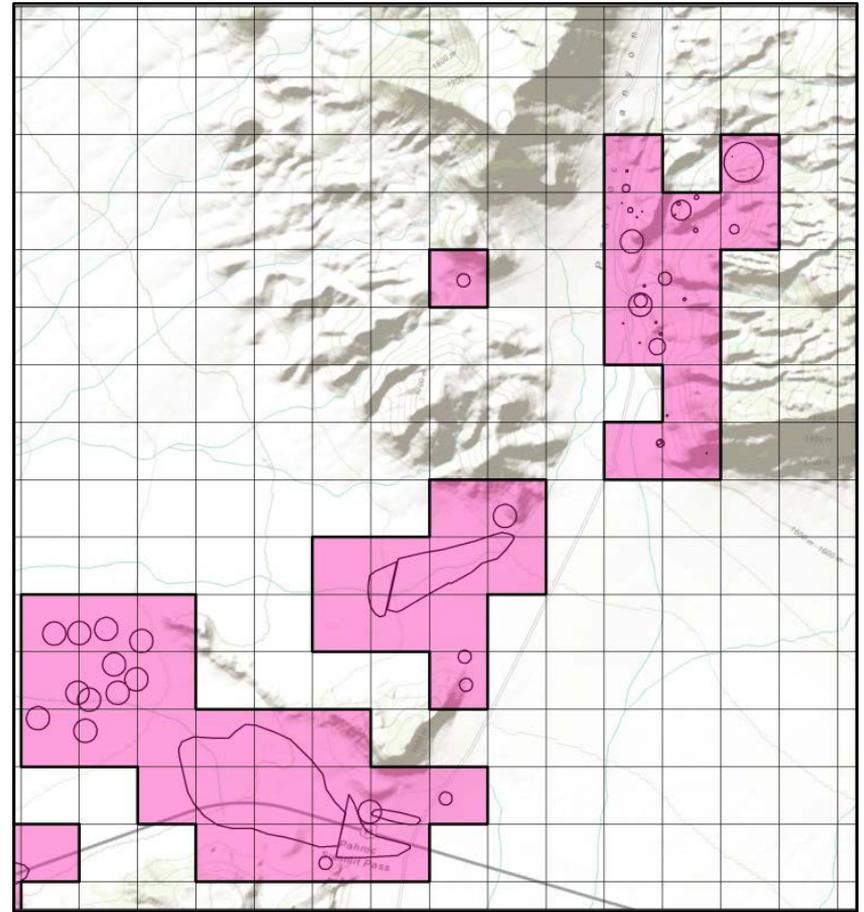
Type	Title	Modified
	WECC Environmental/Cultural Data Inventory	2015-02-20
	WECC Environmental Data Quality Protocol	2015-02-20
	WECC Environmental Risk Layers.gdb	2015-02-20
	Cultural_Resource_Area_Types	2014-10-07

Cultural Resource Data

- Cultural resource data differs from environmental resource data
 - Location of cultural resources is highly sensitive
- Using cultural resource data in transmission planning requires a different approach
 - Relative density of known cultural sites
 - Whether and when a location has been surveyed

Approach to Applying Cultural Data

- Grid cells that contain any sites are marked as cultural resource grid cell
- Identify the number of grid cells in the “neighborhood” (directly adjacent) to each cell
- Range of 0 to 9



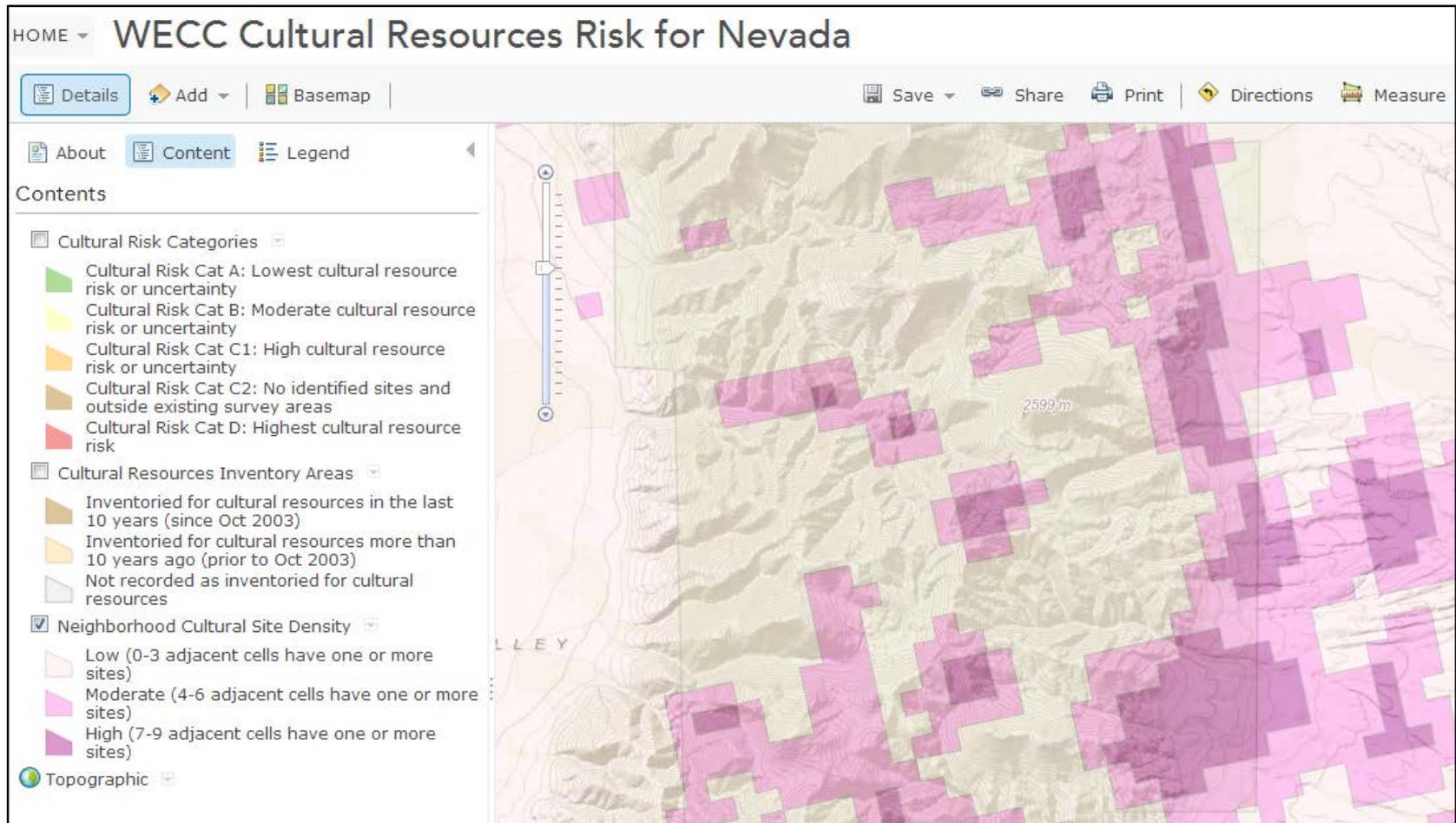
Cultural Resource Data Approach

Designation	Name	Description
Category A	Lowest Cultural Resource Risk or Uncertainty	“Low Density” of sites that have been surveyed in the last 10 years
Category B	Moderate Cultural Resource Risk or Uncertainty	Areas where a “Low Density” of sites has been identified, but where the survey information is older (>10 years)
Category C	High Cultural Resource Risk or Uncertainty	Areas with a “Moderate Site Density” (regardless of when or if a survey has been conducted in the area).
Category D	Highest Cultural Resource Risk or Uncertainty	Areas with a “High Site Density” regardless of when or if a survey has been conducted in the area.
Category E	Unknown Cultural Resource Risk or Uncertainty	Areas with a zero site density and where no surveys have been conducted.

Cultural Risk Assignments

Site Density ⁺⁺	Area Surveyed Within Last 10 Years	Area Surveyed Prior to Last 10 Years	Outside Surveyed Area
0	A	B	E
Low (1-3)	A	B	C
Moderate (4-6)	C	C	C
High (7-9)	D	D	D
Any cell listed as TCP/sacred site	D	D	D
⁺⁺ Number of grid cells found within the neighborhood			

Cultural Resource Risk Example



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