Environmental Assessment of California's Renewable Energy Resources

RETI Environmental Working Group
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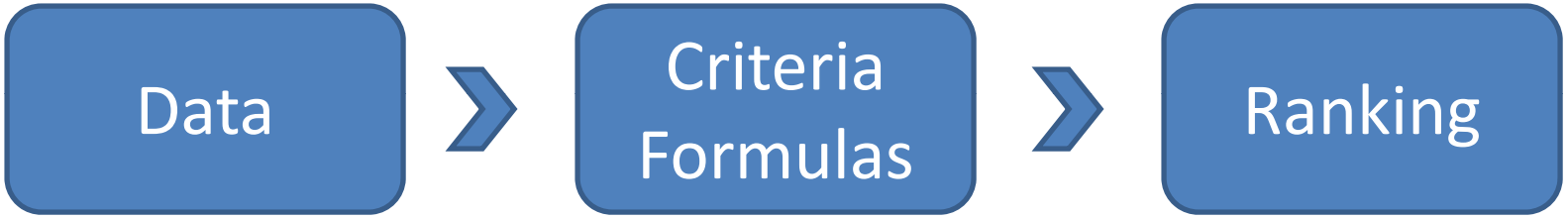
EWG Goals

- Identify competitive renewable energy resource zones (CREZs) which minimize environmental concerns
- Process to be:
  - Objective
  - Transparent
  - Based on publicly available data

EWG Background

- Identification of areas in California in which energy development is prohibited or significantly restricted by law or policy
  - Prohibited areas mapped as black
  - Other restricted areas mapped as yellow

Assessment Process



Environmental Criteria

- Minimize area needed to collect and transmit energy [2 criteria]
- Minimize proximity to protected areas [2 criteria]
- Minimize disruption of wildlife and species of special significance [3 criteria]
- Maximize utilization of degraded lands [1 criterion]

Assessment Data

- CREZ Areas [29 total]
  - Project development areas by technology
  - Total CREZ area
  - Area of buffer around CREZ 2 miles wide
  - Maps supplied by Black & Veatch
  - Data extracted by CA Energy Commission
- Expected generation capacity and annual energy potential, by technology
  - Source = Black & Veatch

Assessment Data (cont)

- Percentage of ground disturbed by wind development (3.5%)
  - Source = US Dept of Energy
- Transmission rights of way areas
  - Source = Black & Veatch
- Restricted areas within CREZ
  - Black & Veatch, CEC
- Restricted areas within CREZ buffer
  - Black & Veatch, CEC

Assessment Data (cont)

- Significant species frequency
  - Source = CA Dept of Fish & Game
- Wildlife corridors
  - Source = DFG
- Important bird areas (IBAs)
  - Source = Audubon Society, DFG
- Degraded area sites
  - Source = BLM, CA Dept of Conservation

Criteria Evaluation Formulas

1. Adjusted project area ÷ annual energy
2. Transmission ROW area ÷ annual energy
3. Protected area within CREZ ÷ annual energy
4. Protected area within buffer ÷ annual energy
5. Count of significant species in CREZ ÷ annual energy
6. Length of wildlife corridors in CREZ ÷ annual energy
7. Area of IBA in CREZ × technology weighting factor ÷ annual energy
8. CREZ area ÷ Count of degraded sites in CREZ ÷ annual energy

Assessment Caveats

- Assessment is for purposes of transmission planning only
- Criteria formula results and CREZ rankings indicate expected relative levels of concern only
- CREZ assessment is not necessarily indicative of individual energy project concerns
- Energy projects require assessment under CEQA and/or NEPA
- Only California resources have been assessed
  - data collection for other resources continues

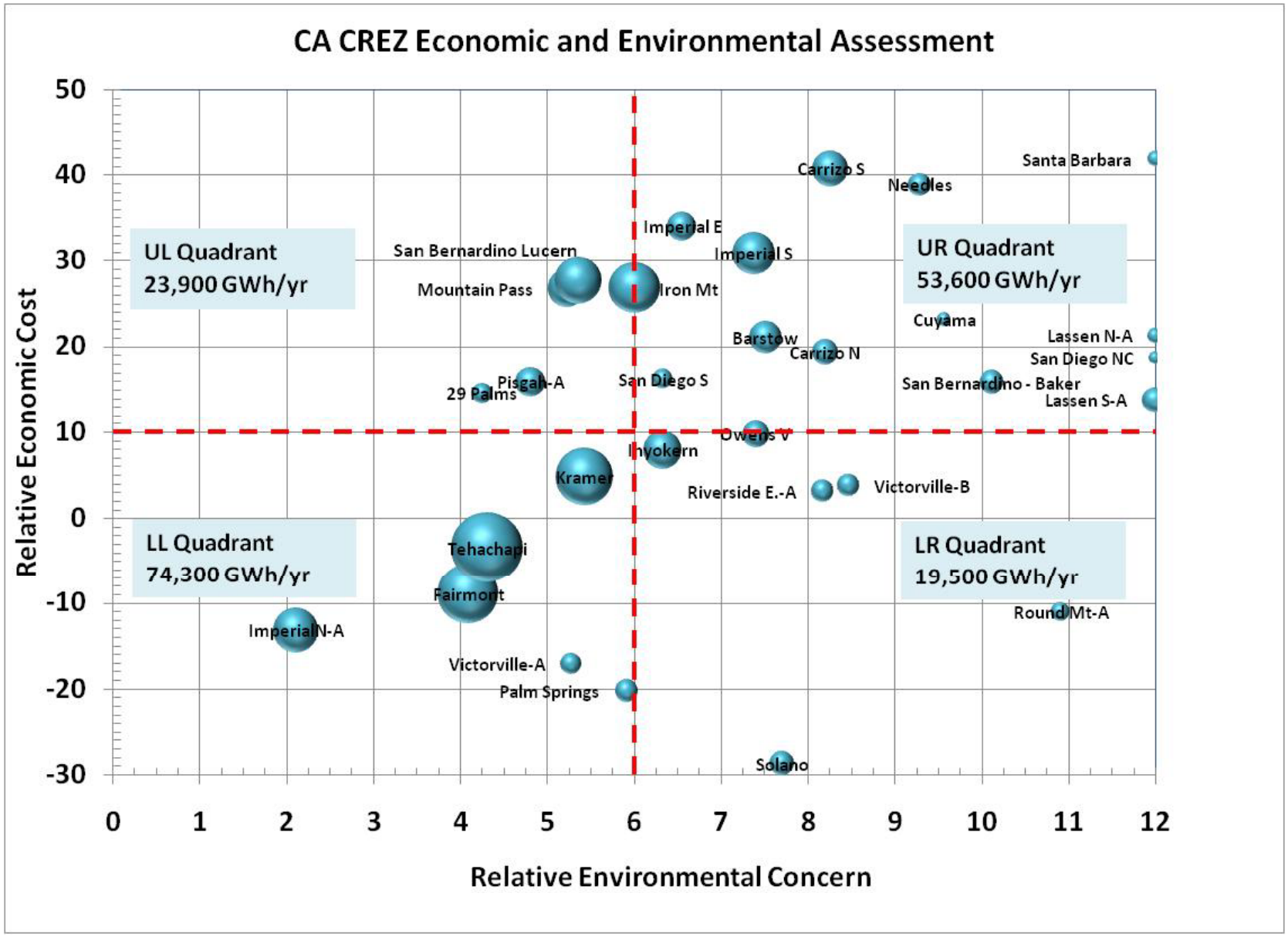
Ranking Methodology

- For each CREZ and each criterion
  - Compute formula result using appropriate data
    - Lower values indicate expectation of relatively lower concern
  - Sort CREZs according to results into one of five bins, 20% of CREZs in each bin
  - Assign CREZ scores 1 to 5 according to bin
    - Lower values indicate expectation of relatively lower concern

Ranking Methodology (cont)

- For each CREZ - Sum ranking results for all criteria
- Sort CREZs according to total ranking scores
- Develop an "environmental supply curve" showing CREZ ranking and cumulative energy
- Identify lowest scoring CREZs needed to supply "net short" energy needed for 33% goal, accounting for uncertainty, etc.
  - Target energy supply = XXX gigawatt-hours/year

    XXX to be decided


CA CREZ Economic and Environmental Assessment
Relative Economic Cost
Relative Environmental Concern
50
40
30
20
10
0
-10
-20
-30
0
1
2
3
4
5
6
7
8
9
10
11
12
UL Quadrant
23,900 GWh/yr
UR Quadrant
53,600 GWh/yr
LL Quadrant
74,300 GWh/yr
LR Quadrant
19,500 GWh/yr
Santa Barbara
Carrizo S
Needles
Imperial E
Imperial S
San Bernardino Lucern
Mountain Pass
Iron Mt
Cuyama
Barstow
Carrizo N
Lassen N-A
San Diego NC
San Bernardino - Baker
Lassen S-A
Pisgah-A
29 Palms
San Diego S
Owens V
Inyokern
Kramer
Riverside E.-A
Victorville-B
Tehachapi
Fairmont
Round Mt-A
Imperial N-A
Victorville-A
Palm Springs
Solano

Conclusions

- The preliminary EWG assessment provides a numerical indication of the relative level of environmental concern associated with California CREZs.
- The assessment is limited to concerns for which there is appropriate state-wide data.
- Environmental assessment results must be compared to economic assessment for final decisions.