Step 2: Filtering resource criteria data into Candidate Study Areas.

Well over 2 million MW of wind and several million MW of solar thermal were identified in the initial resource maps. In comparison, the peak load for WECC in 2007 was about 150,000 MW in 2005. The maps created based on the resource criteria {link to resource criteria tables} required further filtering to begin the process of identifying the high potential renewable energy zones. Along with that, the GTM Work Group requested that the ZITA group limit the total number of Renewable Energy Zones (REZs) to approximately 50. Any more than 50 would be unmanageable from a programming perspective. With the goal of identifying areas for large, regional renewable energy transmission, lower class resources were removed from the analysis.

The Technical Committee also determined at their October meeting that it would be important to recognize the most productive Renewable Energy Zones in every state or province. The rationale for this assumption acknowledges that each state's REZs may not be viable for regional transmission, as determined through the Transmission Modeling assessment, but may address in-state needs or be 'picked up' along interstate transmission corridors from a REZ to a load center. In other words, it may be more cost effective for Idaho to use local class 3 wind resources than to fund a transmission line to class 5 resources in Wyoming.

Given the variations in maximum wind power classes and solar DNI levels among states in the Western Interconnect, it was determined that the 'best of the best' resource would be identified in each state and serve as the minimum resource class identified in that state in the analysis. The underlying assumption for establishing these criteria is that higher class wind and solar are more economical to develop and will be developed first. Further, it will benefit REZs to have their best resources used to determine economics, rather than to have all resources counted. For example, a REZ with 10,000 MW of class 4 wind will be more attractive (on average) than a REZ with 10,000 MW of class 4 and 10,000 MW of class 3.

For certain states and provinces, the amount of a resource is so vast, that to assess the full potential is unwieldy.. Capturing the best resources in a state or province for potential REZ designation is not meant to suggest projects outside a REZ are undevelopable. It serves to identify areas that have the potential to justify regional transmission lines and the associated expense of building those lines. The expectation is that nearby lower class resource projects would benefit from these large transmission lines being built closer to their locations.

Reviewing the resource potential for wind demonstrates how the minimum class criteria were identified. The table below shows the raw potential wind capacity in each US state before most of the filters have been applied.[1] Examining a state, such as Wyoming, shows that there is over 600,000 MW of all class resources, with over 127,000 MW of class 5 and up wind. Considering the total peak load for WECC was about 150,000 MW in 2005, focusing on class 5 and up for Wyoming should be sufficient. Similarly Montana has a very large amount of class 5 and up wind, and Colorado and New Mexico have large amounts of class 4 and up wind. Other regions generally require class 3 resources to be considered before similar magnitudes can be identified.

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[1] Only preliminary environmental exclusions were applied to this data set. This includes clear development restrictions such as national parks and wilderness areas.

States MW potential and minimum wind class

	Class 3 (MW)	Class 4 (MW)	Class 5-7 (MW)	Min Wind Class
Arizona	30,297	3,306	1,168	3
California	49,560	16,204	11,845	3
Colorado	251,212	82,229	13,434	4
Idaho	36,262	5,405	2,512	3
Montana	624,664	242,315	60,712	5
Nevada	29,511	6,163	2,940	3
New Mexico	249,061	64,094	12,499	4
Oregon	50,551	11,200	4,304	3
Utah	26,762	5,025	2,164	3
Washington	40,116	11,858	4,416	3
Wyoming	327,290	162,798	127,033	5
Total	**1,715,285**	**610,595**	**243,026**	

A similar approach was taken with solar, however direct normal insolation (DNI) was used to identify the best solar resources in each state. The table below shows the minimum DNI considered in each of the states with strong solar resources.

State/Province	**Min DNI (kWh/M^2/day)**
Arizona	7.25
Baja California	7
California	7
Colorado	7
New Mexico	7
Nevada	7
Utah	6.5

NOTE: Wind, Solar and Geothermal will *create* a Candidate Study Area and Qualified Resource Area, but the final REZ MW potential will reflect all resources (biomass, hydro, geothermal, wind and solar) within those boundaries. The MW potential will be calculated after additional filtering and incorporating wildlife data still to be received.