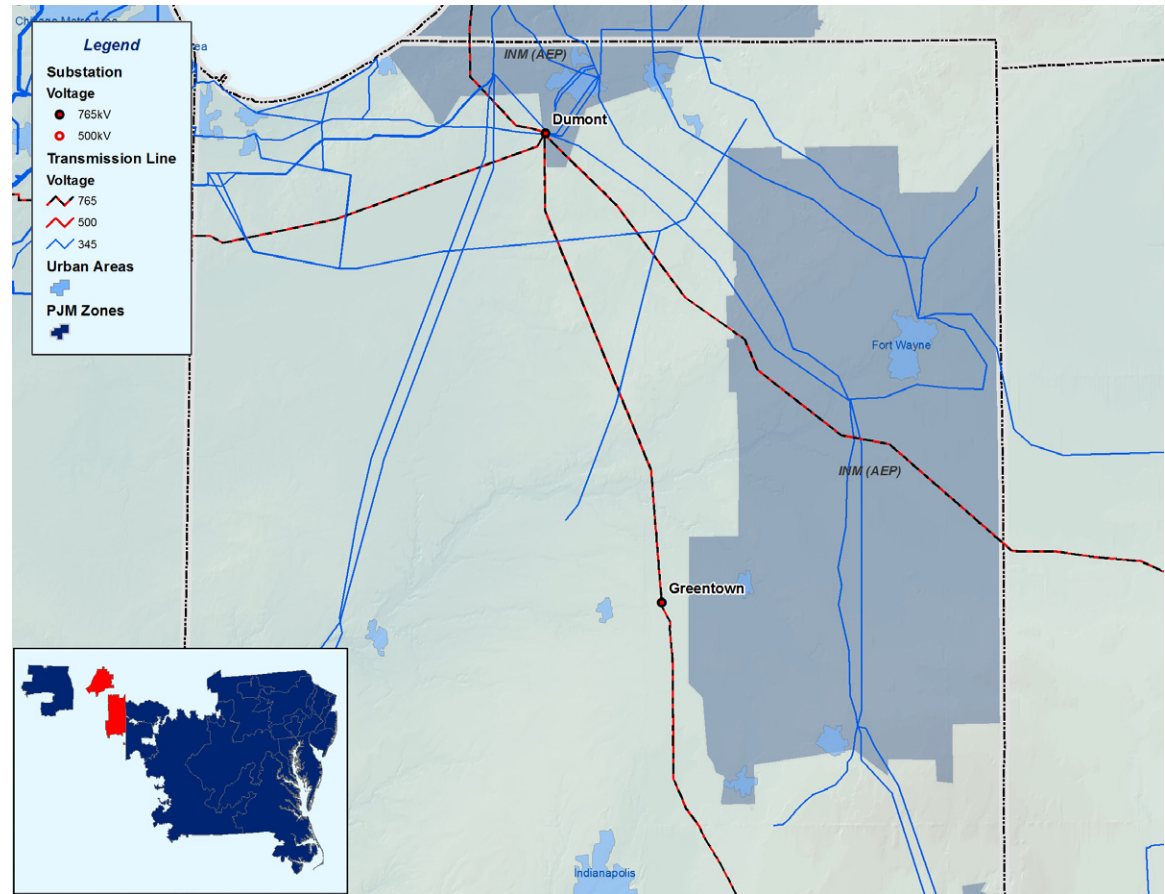




8.3: Indiana RTEP Overview

PJM operates the electric transmission system for the delivery area served by American Electric Power (AEP) in Indiana, as shown on Map 8.12. The transmission system in Indiana delivers power to customers from native generation resources and power transfers across tie-line facilities with adjoining systems.

Map 8.12: PJM Service Area in Indiana



Critical RTEP Issues

PJM continues to address a number of issues with a bearing on reliability in Indiana and the regional transmission expansion plans required to maintain reliability. Table 8.13 summarizes key critical issues facing Indiana and identifies sections of this report where additional discussion may be found.

8.3.1 – Load Growth and Existing Generation

Internal Load Growth

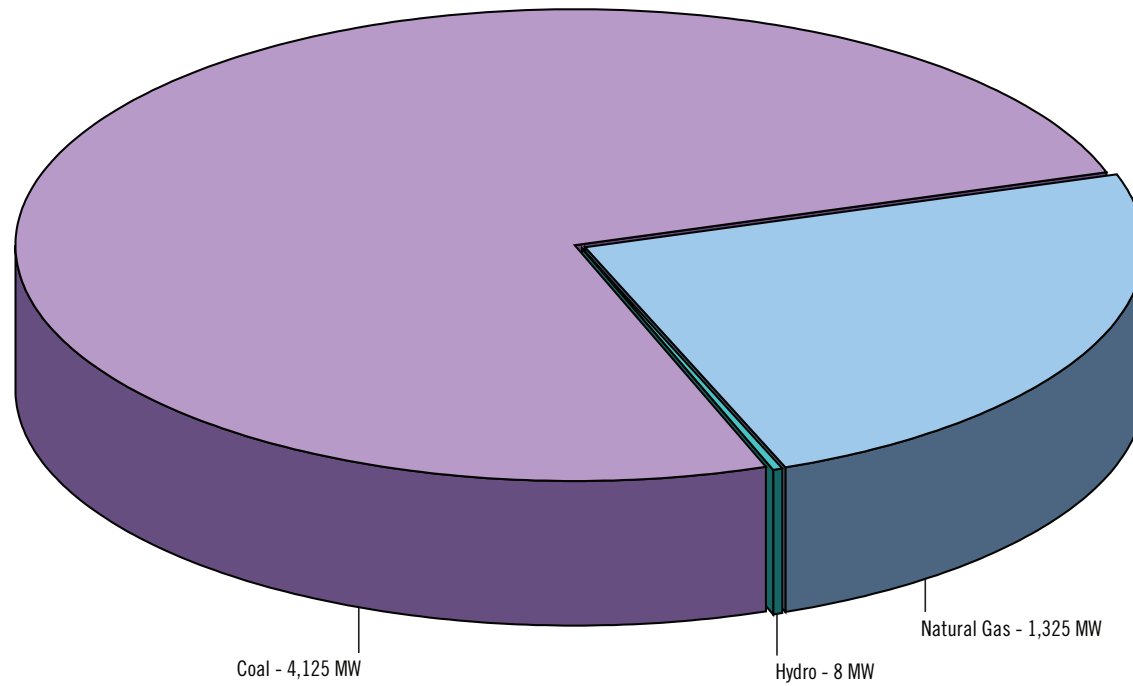
Load growth for summer and winter periods in shown in Table 8.1 in **Section 8.0.2**. Peak summer load growth rates for the AEP Transmission Owner zone within PJM is expected to be 1.1% on average over ten years through 2018. The peak winter load growth rate for AEP is expected to be 0.8% on average over ten years through 2017/18.

Forecasted loads are modeled in power flow studies used to develop PJM’s RTEP through December 2008. PJM’s RTEP includes baseline transmission upgrades to meet expected 2013 peak load conditions. PJM’s ongoing RTEP process continues to study anticipated needs for additional transmission expansion plans to meet load growth requirements beyond 2013 as well.

Table 8.13: Critical Issues in Indiana

| RTEP Topic | Report Section | Importance |
|---|----------------|--|
| Load Growth Trends | 2.2 | 10-year forecasted peak power demand for individual TO zones |
| Load Management Trends | 2.9 | Impacts of Load Management as a capacity resource. |
| Generator Interconnection Plans | 2.3 | New sources of electric power to meet customer demand. |
| Wind and other renewable fuel sources | 2.2 | Potential for wind and other renewable fuel generating resources to meet RPS requirements. |
| Generator Deactivations | 2.4 | Impact on transmission requirements from generation removed from operation. |
| Merchant Transmission Interconnection Plans | 2.5 | Impact of merchant transmission interconnection requests. |
| 502 Junction - Loudoun (TrAIL) 500 kV Line Validation | 3.2 | Resolving NERC reliability criteria violation overloads beginning in 2011 |
| Amos-Kempton 765 kV Line (PATH) Validation | 4.3 | Resolving NERC reliability criteria violation overloads beginning in 2013 |
| 2013 Baseline Upgrades Below Backbone 500 kV Level | 5.5 | Resolving zone-specific NERC-based reliability criteria violations. |
| Additional Backbone Facilities Under Construction | 7.0 | Ongoing assessment of need for new backbone transmission facilities. |
| Market Efficiency Studies | 7.0 | Assessing RTEP upgrades for potential market efficiency benefits. |

Figure 8.8: Existing Installed Capacity in Indiana



Existing Generating Capability

Figure 8.8 provides a snapshot of the existing installed capacity by fuel type in Indiana.

8.3.2 – Generator Interconnection

PJM has received 34 interconnection requests for installation in Indiana since AEP’s integration into PJM in 2004, as summarized through Queue U4 in the table below

| | MW | # of Projects |
|--------------------|-------|---------------|
| In-Service | 556 | 5 |
| Under Construction | 250 | 1 |
| Active | 4,422 | 21 |
| Withdrawn | 2,612 | 7 |
| Total | 7,840 | 34 |

Table 8.14 includes generating resource interconnection requests located in Indiana, shown on Map 8.13. PJM received these requests during the windows of time through Queue U4, which closed January 31, 2009. The generator interconnection projects in this Table are either under construction or active in PJM’s interconnection process. **Section 2.2** of this report describes how generation interconnection requests are modeled in RTEP studies.

For the sake of reporting, generating resources that are fully in-service (designated “IS”) are included in the summary tabulation above but are NOT separately enumerated in Table 8.14.

A status code of “IS-NC” (in-service, no capacity) indicates a generator that is in-service for energy only. Such units have not requested consideration for capacity status.

A status code of “ISP” (in-service, partial) denotes a generating resource that is only partially in-service and has not reached full capacity status.

A generating unit is ineligible for full capacity status until all transmission upgrades needed to ensure deliverability are completed. Only then will PJM grant capacity status designation.

Table 8.14: Queued Generation Interconnection Requests Indiana

| Queue | Project Name | MW | MWC | Status | Schedule | TO | Fuel Type |
|--------|-----------------------------|-----|------|--------|-----------------|-----|-----------|
| Q01 | Olive-Dequine 345 kv | 500 | 60.2 | IS-NC | 7/1/2009 0:00 | AEP | Wind |
| Q03 | Olive-Duquine 345 kV | 250 | 50 | UC | 7/1/2012 0:00 | AEP | Wind |
| R03 | Adams - Allen 138 kV | 130 | 26 | ACTIVE | 12/31/2008 0:00 | AEP | Wind |
| R60 | Convoy-West Lima 345 kV | 350 | 70 | ACTIVE | 6/30/2010 0:00 | AEP | Wind |
| R61 | Collingwood-Hiple 345 kV | 350 | 70 | ACTIVE | 6/30/2010 0:00 | AEP | Wind |
| R97 | Rockport 765 kV | 20 | 20 | ACTIVE | 6/27/2007 0:00 | AEP | Coal |
| S06 | Olive-DeQuine 345 kV | 202 | 40 | ACTIVE | 12/1/2009 0:00 | AEP | Wind |
| S71 | Bluff Point 138 kV | 120 | 24 | ACTIVE | 10/1/2011 0:00 | AEP | Wind |
| S72 | Convoy-West Lima 345 kV | 300 | 60 | ACTIVE | 12/1/2010 0:00 | AEP | Wind |
| S73 | Lincoln-North Delphos | 200 | 40 | ACTIVE | 12/1/2010 0:00 | AEP | Wind |
| T126 | Olive-Dequine 345 kV | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T127 | Olive-Dequine 345 kV | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T183 | Olive-Dequine 345 kV | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T184 | Olive-Dequine 345 kV | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| U1-087 | Dequine 345 kV | 150 | 19.5 | ACTIVE | 12/31/2010 0:00 | AEP | Wind |
| U1-088 | Dequine 345 kV | 100 | 13 | ACTIVE | 12/31/2010 0:00 | AEP | Wind |
| U2-090 | Desoto-Tanners Creek 345 kV | 200 | 26 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U2-091 | Delaware-Richmond 138 kV | 100 | 13 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U2-092 | Delaware-Centerville 138 kV | 100 | 13 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U3-002 | Mullin-Greentown Tap 138 kV | 200 | 26 | ACTIVE | 7/1/2013 0:00 | AEP | Wind |
| U4-003 | Olive-Dequine 345 kV | 200 | 26 | ACTIVE | 6/1/2012 0:00 | AEP | Wind |

Figure 8.9 shows the capacity rights requested, by fuel type, for generator interconnection requests through Queue U4 that are located in Indiana and are in-service, under construction or active in PJM's interconnection process.

Map 8.13 shows the location of each generation interconnection request in Indiana.

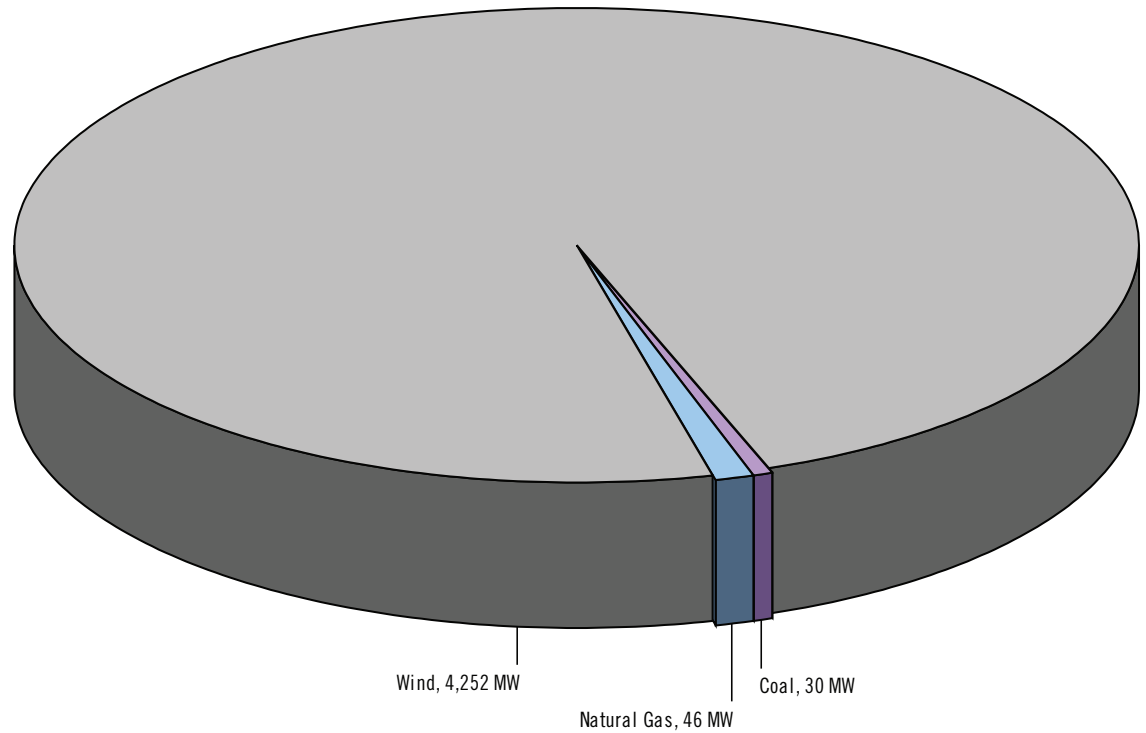
8.3.3 – Generation Deactivations

Through December 31, 2008, PJM has not received notice of any anticipated generator deactivations in Indiana.

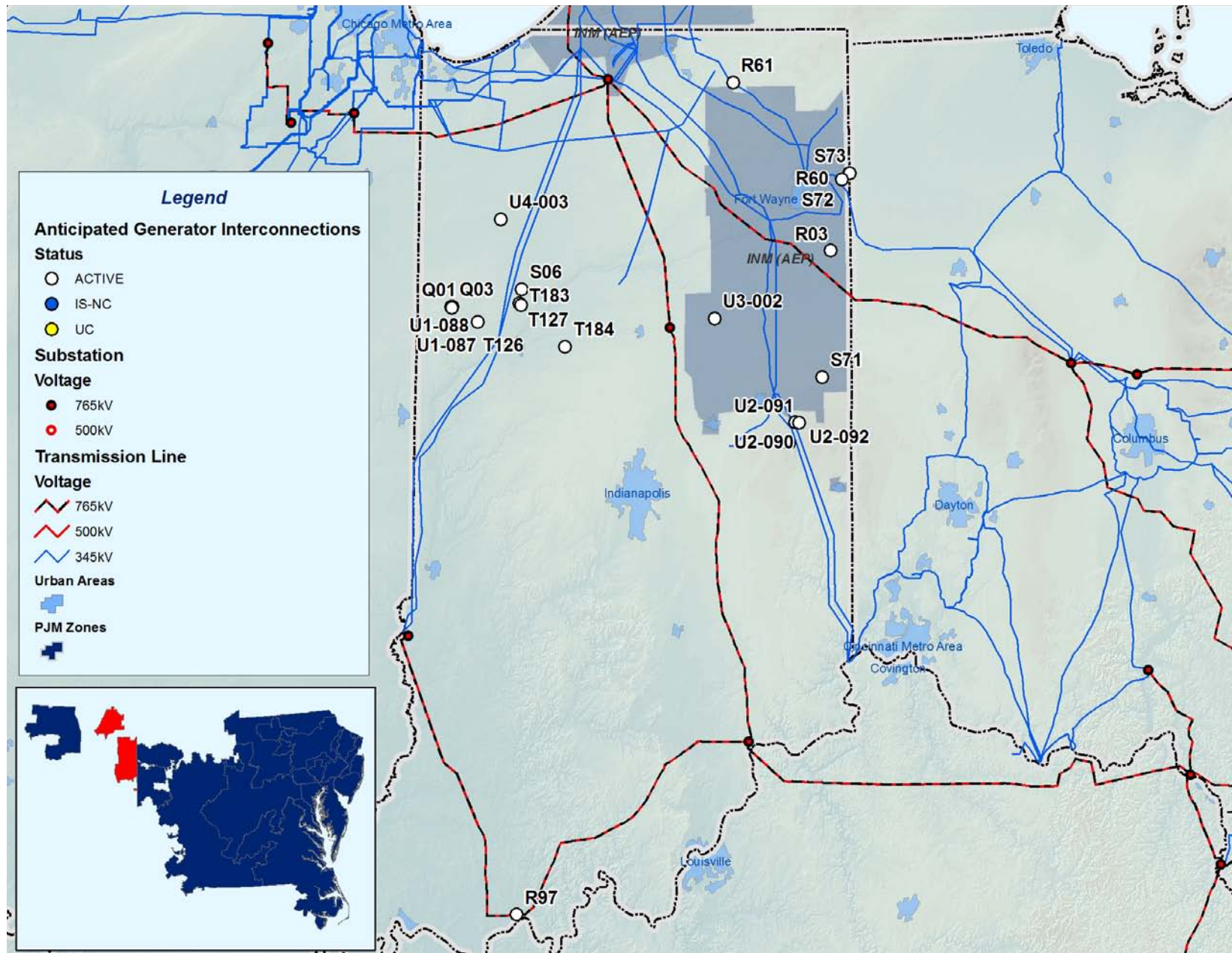
8.3.4 – Merchant Transmission Interconnection Requests

Through January 31, 2009, PJM's interconnection queues contained no requests for merchant transmission interconnection in Indiana.

Figure 8.9: Queued Capacity in Indiana



Map D-153: Queued Generation Interconnection Requests in Indiana

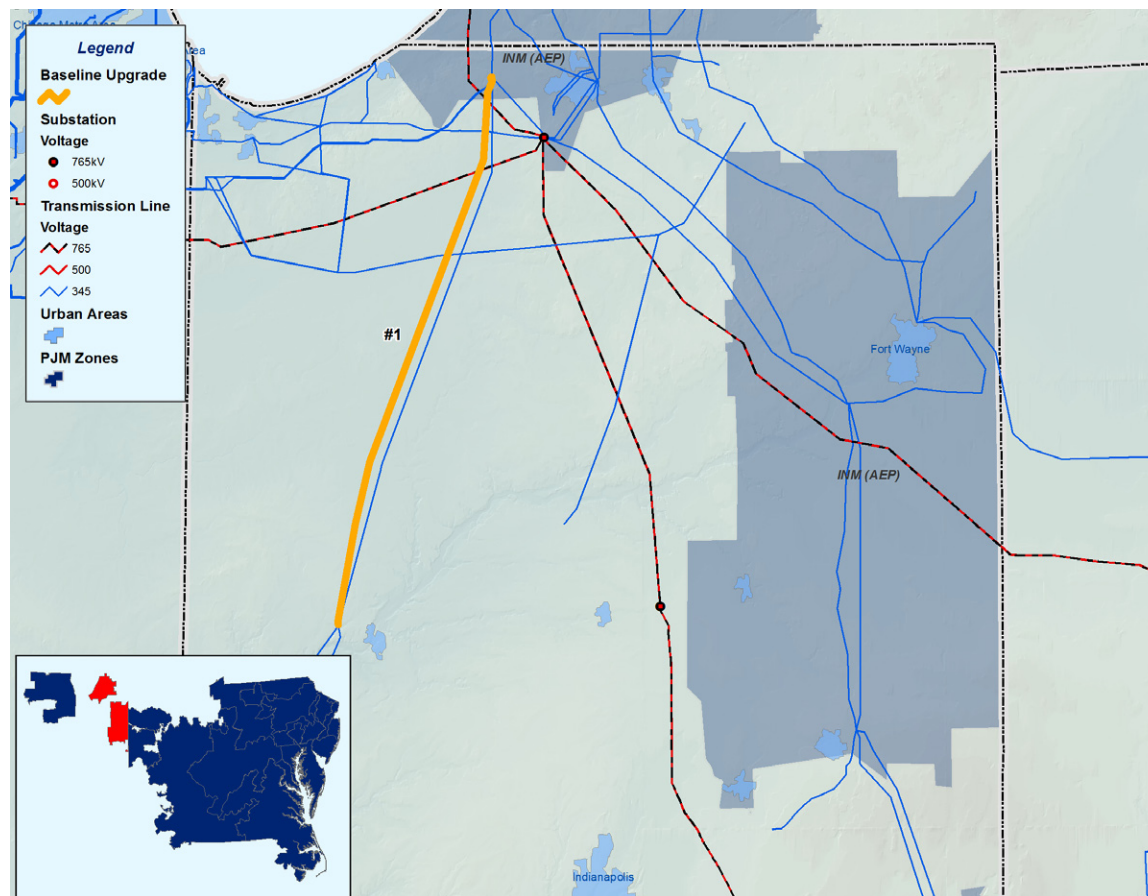


8.3.5 – Transmission Expansion Plans in Indiana

New RTEP planned transmission upgrades greater than \$5 million as approved by the PJM Board during 2008 included one network upgrade on the Olive – Dequine transmission line for December 2009. Map 8.14 shows the location of upgrades enumerated in Table 8.15.

A complete listing of all system reinforcements approved by the PJM Board can be found on PJM’s Web site via the following URL: <http://www.pjm.com/planning/rtep-upgrades-status.aspx>.

Map 8.14: Major 2008 RTEP Plans in Indiana



8.3.6 – Interconnection Requests for Generation Powered by Renewable Fuel Sources

PJM’s RTEP process offers a structure that assures consistent, equal opportunity across fuel types while flexible enough to adapt to specific technical realities and market challenges. Presently, PJM’s queues include interconnection requests in Indiana for plants fueled by wind, as summarized in Table 8.16 and shown on Map 8.15.

While some renewable resources can operate in a manner similar to the traditional fossil fueled power plants, other renewable energy sources, such as wind, are recognized as intermittent resources. Their ability to generate power is directly determined by the immediate availability and/or magnitude of their specific “fuel.” For example, wind turbines can generate electricity only when wind speed is within a range consistent with the physical specifications of the related turbines. This presents challenges with respect to real-time operational dispatch and specific capacity value. To address the latter issue, PJM has established a set of business rules unique to intermittent resources that provide for the determination of credible capacity values robust enough to represent capacity during the PJM summer peak period.

Table 8.16: Interconnection Requests in Indiana for Generation Powered by Renewable Fuel Sources

| Queue | Project Name | MW | MWC | Status | Schedule | TO | Fuel Type |
|--------|-----------------------------|-----|------|--------|-----------------|-----|-----------|
| Q01 | Olive-Dequine 345 kv | 500 | 60.2 | IS-NC | 7/1/2009 0:00 | AEP | Wind |
| Q03 | Olive-Duquine 345 kv | 250 | 50 | UC | 7/1/2012 0:00 | AEP | Wind |
| R03 | Adams - Allen 138 kv | 130 | 26 | ACTIVE | 12/31/2008 0:00 | AEP | Wind |
| R60 | Convoy-West Lima 345 kv | 350 | 70 | ACTIVE | 6/30/2010 0:00 | AEP | Wind |
| R61 | Collingwood-Hiple 345 kv | 350 | 70 | ACTIVE | 6/30/2010 0:00 | AEP | Wind |
| S06 | Olive-DeQuine 345 kv | 202 | 40 | ACTIVE | 12/1/2009 0:00 | AEP | Wind |
| S71 | Bluff Point 138 kv | 120 | 24 | ACTIVE | 10/1/2011 0:00 | AEP | Wind |
| S72 | Convoy-West Lima 345 kv | 300 | 60 | ACTIVE | 12/1/2010 0:00 | AEP | Wind |
| S73 | Lincoln-North Delphos | 200 | 40 | ACTIVE | 12/1/2010 0:00 | AEP | Wind |
| T126 | Olive-Dequine 345 kv | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T127 | Olive-Dequine 345 kv | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T183 | Olive-Dequine 345 kv | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| T184 | Olive-Dequine 345 kv | 200 | 40 | ACTIVE | 10/30/2010 0:00 | AEP | Wind |
| U1-087 | Dequine 345 kv | 150 | 19.5 | ACTIVE | 12/31/2010 0:00 | AEP | Wind |
| U1-088 | Dequine 345 kv | 100 | 13 | ACTIVE | 12/31/2010 0:00 | AEP | Wind |
| U2-090 | Desoto-Tanners Creek 345 kv | 200 | 26 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U2-091 | Delaware-Richmond 138 kv | 100 | 13 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U2-092 | Delaware-Centerville 138 kv | 100 | 13 | ACTIVE | 12/31/2011 0:00 | AEP | Wind |
| U3-002 | Mullin-Greentown Tap 138 kv | 200 | 26 | ACTIVE | 7/1/2013 0:00 | AEP | Wind |
| U4-003 | Olive-Dequine 345 kv | 200 | 26 | ACTIVE | 6/1/2012 0:00 | AEP | Wind |

Map 8.15: Interconnection Requests in Indiana for Generation Powered by Renewable Fuel Sources

