Shale Gas and Microgrids

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Microgrids are portions of the larger electrical grid which may be designed, optimized and operated in an independent manner. While microgrids are normally operated as part of the larger grid, they also can be disconnected and operated independently under some circumstances. The process of designing and optimizing microgrids normally encompasses consideration of integrated on-site power generation and energy storage and the use of local energy sources, ranging from sun to wind to fuels such as shale gas, for distributed power generation. The presence of local fuel sources enables a wider degree of freedom in the microgrid optimization process via the consideration of approaches such as combined heat and power, large scale energy storage and large scale, dispatchable, distributed energy generation.

This presentation will describe ongoing efforts at Penn State's Applied Research Laboratory in the area of microgrid design and optimization. The utility of using microgrids to focus the assessment of energy alternatives, including the availability of local fuels such as shale gas, will be discussed in the context of The Department of Energy's Quadrennial Technology Review. Recent results and future plans will be briefly described.