

# Ameren Illinois Smart Grid Test Bed Summary

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# Technology Applications Center – (TAC) (SG Test Bed) background

On October 26, 2011, the Illinois Legislature enacted Senate Bill 1652 which included a component requiring Ameren Illinois to construct or designate a Smart Grid Testing facility.

## Technology Applications Center Services

- Ameren Illinois will provide testing infrastructure, resources, and services from which companies will be allowed to test programs, technologies, business models and other Smart Grid-related activities while connected to a live utility grid.

## Requirements from SB 1652 for Technology Applications Center

- Provide companies with open unbiased opportunities for testing programs, technologies, business models, and other Smart Grid-related activities while connected to the grid.
- Provide companies with opportunities to test and showcase Smart Grid technologies and services, especially those likely to support the economic development goals of the State of Illinois.
- Facility will include a live MISO (Midwest Independent System Operator) signal to provide testing capabilities of new utility scale applications associated with distributed wind and solar resources.

# Technology Applications Center - (SG Test Bed)

## Technology Applications Center Capabilities

- Energize equipment/sensors at voltage levels up to and including 69,000 volts (Champaign) 12,000 volts (Decatur)
- Verify the proper operation of system control, system optimization-sensory equipment
- Perform energized testing of AIC identified equipment for acceptability prior to wide scale adoption.
- Communications infrastructure necessary to receive live MISO signals.
- Future capability to analyze communications of Test Bed-located Home Area Network appliances utilizing AMI network.
- Future capability to analyze communications with live customers via AMI network.
- Collaboration with UIUC on testing & validation procedures, as well as test plan development



# Champaign Technology Applications Center SW Corner of UIUC Campus



Test Bed Substation,  
Underground,  
Overhead  
Infrastructure

Possible Test Bed  
Expansion Site  
Approx. 200'x350'

# Decatur Technology Applications Center Location



# Technology Applications Center (SG Test Bed) Fact Sheet

## Champaign Technology Applications Center (TAC)

- 69/12KV, 5.25 MVA transformer
- (2) Two 12KV distribution circuits. Include G&W Viper reclosers with Schweitzer relays.
  - One circuit feeds approximately 180 live customers, other circuit feeds TAC Overhead and Underground infrastructure.
- Building incorporates communications and control infrastructure, 125 V DC battery, Smart Appliances for Home Area Network testing capabilities.
- Communications includes live MISO signal that incorporates ramp rate information, critical peak price and market based power dispatch signals.
- Gas transmission/distribution facilities exist on this site.
- Additional space is available to expand footprint of Test Bed site (see slide 5)

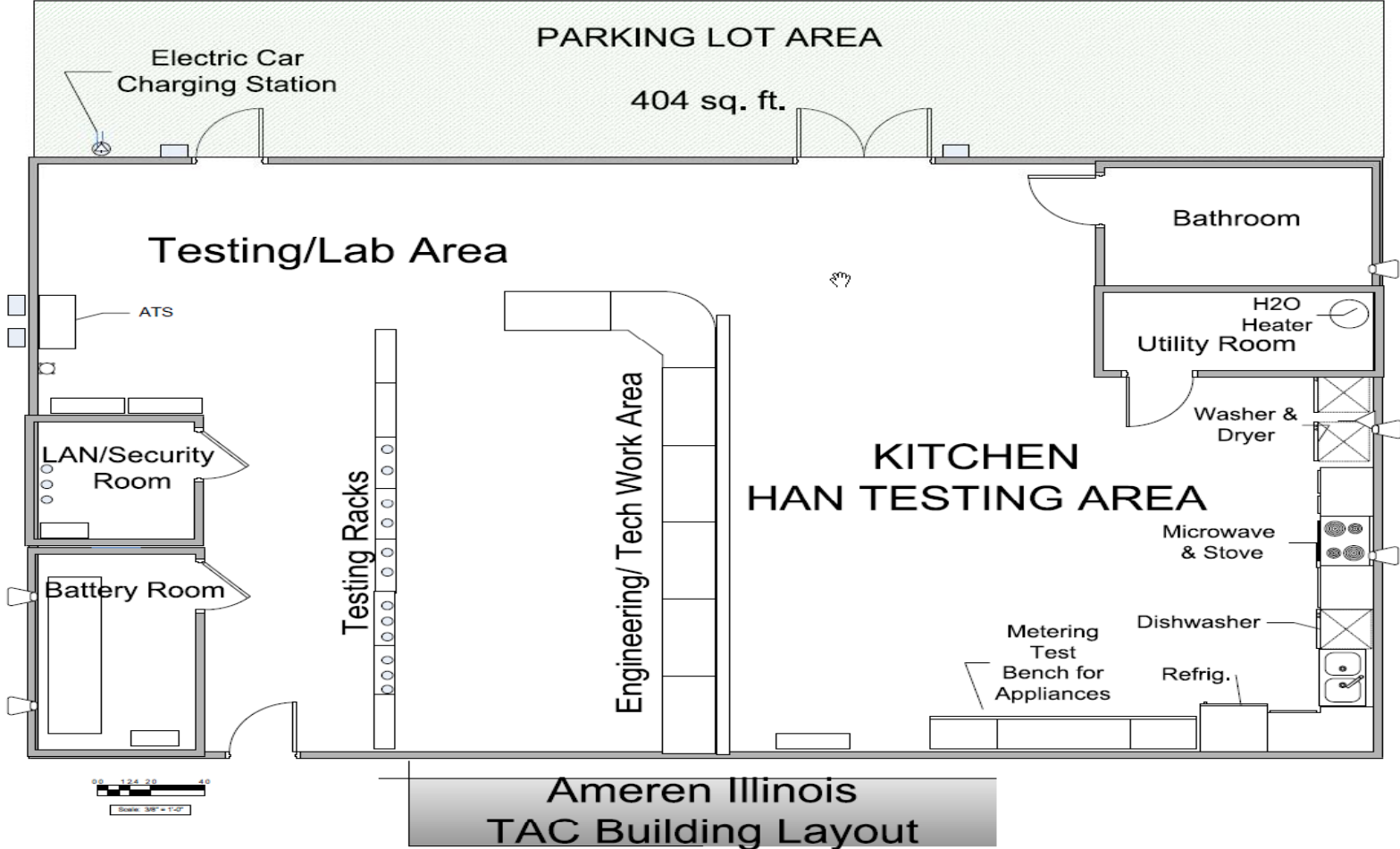
## Decatur Technology Applications Center (TAC)

- Access to four (4) 12KV distribution circuits for connecting applicant equipment.
- Energize equipment/sensors at voltage levels up to and including 12,000 volts.
- Future capability to communicate to customers identified for and have agree to possible Home Area Network testing.

**Timelines – Champaign TAC available 2Q 2013, Decatur TAC available 4Q 2012**



# Preliminary Layout of Champaign TAC Control Building





# TAC Benefits, Application Process, Security

## Test Bed Benefits

- Fulfill the Act's intent to facilitate the development of new Smart Grid technologies for promotion of new products.
- Provides Ameren Illinois with infrastructure and resources to test, document and analyze new distribution equipment and services prior to wide scale adoption of these devices.
- Establishes opportunity for Ameren & UIUC to jointly research Smart Grid-related technologies through respective test beds.

## Receiving, Reviewing, and Qualifying Applicant Proposals

- Initial Application, Supplemental Information Request Form

## Data Security

- Criteria Required for Grid Connection of Applicant Equipment, Customer Data Privacy policy



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