Thailand Smart Cities Paper Outline

# Introduction

* Urbanization is driving rapid socioeconomic growth in Thailand, posing challenges for power systems
  + Population & GDP trends in Thailand & Bangkok
  + Energy demand trends in Thailand & Bangkok
  + Power system challenges: reliability, meeting peak demand
* Power development and urbanization must be in line with national RE expansion and emissions reduction goals
  + Overview of national goals/ commitments
  + Link to urbanization & energy demand growth challenges
* Bangkok’s Smart City plans address the challenges of maintaining power system reliability as urbanization continues while contributing to national emissions reduction goals
  + Overview of smart cities concept & Thailand Smart Grid Master Plan
  + Power sector (smart grid) component
    - MEA focus areas, technologies, and policies
    - Relevance to national goals/ commitments (e.g., LEDS)
* MEA (and other authorities?) need long-term planning tools to ensure that policy & technology implementation will be in line with local & national goals
  + Introduce integrated assessment modeling & GCAM
  + Benefits provided by GCAM analysis (climate change context, long-term assessment, technology analysis, holistic approach)

# Methods

## Scope

* Temporal scope (5-year timesteps through 2100)
* Spatial scope (national & 3 MEA provinces)

## GCAM inputs

* Population & GDP data sources
* Assumptions
  + Same pre-2010, post-2020 population & GDP growth rates for each province & national
  + Constant GDP growth rate after 2037
* Other (non-socioeconomic) input data & assumptions (pending feedback from Thammasat)

## Scenarios (describe each)

1. Mandatory (or all?) National Policies
2. Extended National Policies (or global best practices)
3. Bangkok Smart Energy
4. Carbon Neutral Thailand
5. Net Zero Thailand

# Results

* Socioeconomic trends
* Scenario 1: Mandatory (or all?) National Policies
  + Power sector
  + Buildings
  + Transportation
  + Industry
* Scenario 2: Extended National Policies (or global best practices?)
  + Power sector
  + Buildings
  + Transportation
  + Industry
* Scenario 3: Bangkok Smart Energy
  + Power sector
  + Buildings
  + Transportation
  + Industry
* Scenarios 4 & 5: Carbon Neutral & Net Zero Thailand
  + Power sector
  + Buildings
  + Transportation
  + Industry

# Discussion

## Scenario comparison

* (Mandatory) National Policies vs Extended or global best practices
* Bangkok Smart Energy vs National Policies
  + What do the smart energy plans add that is not covered in the national policies?
  + (How do smart energy plans align with global best practices?)
* Carbon neutral & net zero Thailand vs other scenarios
  + How/ do what extent do existing national & smart energy plans contribute to the measures required to reach carbon neutral & net-zero goals?
  + Which existing areas/ policies will need stronger measures and what areas are “missing” from existing national & smart energy plans?
  + Include discussion of carbon neutral vs net zero scenarios
    - How do the necessary measures differ and are Bangkok smart energy/ smart cities measures implicated in this difference?

## Policy recommendations

* Based on above comparison, recommend focus areas and additional measures needed to reach national carbon neutral & net-zero goals given existing national & Bangkok policies/plans