

## Three Funded Ph.D. Student Positions

The [Sustainable Building Systems Laboratory](#) in the Department of Civil, Environmental and Architectural Engineering at the University of Colorado Boulder currently has three fully funded Ph.D. positions in modeling smart, sustainable and resilient cities available immediately.

### Position 1: Modeling of Smart Cities

This research is to develop multi-scale modeling technique for the design and operation of future [smart and connected cities](#). It will create an open source modeling framework to study the interaction of multiple infrastructures (e.g. energy, transportation, communications networks). It will also develop and perform field test of advanced control strategies for smart and connected homes to enable [building to grid integration](#). This is also a part of [IBPSA Project 1](#), which is an international collaborative project in develop Modelica-based technique for building and community energy systems.

### Position 2: Modeling of Sustainable Cities

This research is to perform large scale building energy modeling to enable the design and operation of future renewable energy cities. Based on our current project in [large scale building energy modeling](#), this research will create a methodology to enable the automatic model generation for millions of buildings using various data sources. High performance computing and big data analysis will be applied in this research.

### Position 3: Modeling of Resilient Cities

This research is to develop and validate a fast airflow and contaminant prediction model which can predict spread of airborne hazards cross the city. The [fast fluid dynamics](#) model will be adopted and improved for the emergency management.

For more information about the related projects, please visit our lab [website](#).

### Candidate Requirements

Although we will provide training on all the required skills, modeling technique, and programing language, we expect the following qualifications from our candidates:

1. Solid background in Engineering and/or Mathematics and/or Physics
2. Willing and be able to learn new knowledge in a short time
3. Some programming experience (e.g. C/C++, Modelica, Matlab, Python, OpenCL, CUDA)
4. Experience in research with tangible outcome is preferred
5. Experience in modeling and simulation for research is a plus
6. Good verbal and written communication skills

### How to Apply

If you are interested in one of these positions, please contact

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