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EC-ASSET: Energy Code – Automated System for Submission Enforcement and Training

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ABSTRACT

Despite the rise of AI technology, most jurisdictions in Florida and elsewhere enforce energy code compliance manually through hard copies. In most situations, there are no “Energy Code” inspectors, and inspections are done piecemeal based on which inspector happens to be in the field, whether structural, roof, or other. Thus, though energy codes are updated to the latest, the full benefit of the change may not be felt due to cracks in submission, training, and enforcement. The need for automation with built-in intelligence is critical.

This proposed concept by the University of Central Florida and its partners aligns well with Topic 6 (“Implementation and Compliance”) of the Bipartisan Infrastructure Law: Resilient and Efficient Codes Implementation goals by “streamlining the compliance, enforcement, and permitting processes.” The proposed work aims to 1) Develop systems to enable the electronic submission of energy code compliance models. 2) Develop systems allowing building officials to retrieve compliance models into mobile devices to better enforce the code through step-by-step context-sensitive guidance on what and how to enforce codes better. 3) Develop training & education systems for contractors and building officials to understand code elements better so that contractors can create more accurate compliance models and building officials can better review the compliance model with actual construction.

EC-ASSET comprises three main modules – 1) the **Submission and Archival Module (SAM)**, 2) the **Retrieval and Enforcement Module (REM)**, and 3) the **Training and Education Module (TEM)**. The compliance tools will be modified so that the final version of the compliance file is automatically uploaded, and the modeler obtains confirmation, such as a QR code. Once uploaded, notified jurisdiction personnel can review the compliance uploads on mobile devices programmed to guide the inspection personnel on the code criteria and what and how to inspect based on the compliance option.

The proposed **EC-ASSET** will eliminate the time, labor, and error potential associated with hardcopy review currently in practice. It provides a powerful tool for cross-checking submissions for accuracy, compatibility, and errors where none exist now. In the future, **EC-ASSET** may also lend itself to seamless RVI-remote virtual Inspections. The International Code Council has been developing guidelines for RVI—Remote Virtual Inspections. As stated therein, the advantages and opportunities are enormous.

The most critical impact will be better and more accurate energy code compliance at all levels. Enhancement to energy code inspection by leveraging data mining and machine learning tools will accrue. Knowledge of field practices is key for stakeholders to understand trends in field practices, develop policies, updates, and incentive programs, plan training, identify communities of energy inequity, etc. It will enhance understanding of how and why parameters vary by jurisdiction and aid in developing customized solutions.