













for a given technology rather than building specific energy modeling. SEM has been used by utilities in 12 states to provide DSM programs that allow building specific savings and paybacks to be calculated in a cost effective manner for buildings as small as 5,000 sf. With SEM, some of the programs are getting 70% of all commercial new construction in their service territory to have energy modeling during design development.

## NEXT STEPS

The authors are presenting these ideas in hopes of receiving feedback on them and suggested refinements. Our ultimate goal is to create a sound, and accepted method for software developers to have simplified energy modeling tools vetted and accepted for use to inform design, calculate savings, and ultimately save more energy by having the custom solutions developed for buildings. We are presenting this idea for the first time here to the modeling community, and hope to also present it to the policy community, and to the design communities. It is our belief that SEM will enable increased adoption of energy modeling, and allow greater savings in a cost effective manner by allowing design professionals to find HVAC systems and efficiency and renewable energy strategies that are well matched for their building and climate.

## REFERENCES

- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). 2013. ANSI/ASHRAE/IES Standard 90.1-2013. Energy Efficient Design of New Low-Rise Residential Buildings. Atlanta, GA.
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). 2014. ANSI/ASHRAE Standard 140-2014. Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs.
- ANSI/ASHRAE/IES (2016). ANSI/ASHRAE/IES 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, Georgia.
- Berkeley, P, P. Haves, and E Kolderup. 2014. Impact of Modeler Decisions on Simulation Results. 2014 ASHRAE/IBPSA-USA Building Simulation Conference
- Briggs, R.L., R.G. Lucas, and Z.T. Taylor. 2003. "Climate Classification for Building Energy Codes and Standards: Part 1—Development Process." ASHRAE Transactions, (1):4610-4611.
- EERE 2016. <http://energy.gov/eere/buildings/articles/new-openstudio-standards-gem-delivers-one-two-punch>. Accessed on November 2016
- COMNET (2017). Retrieved from Commercial Buildings Energy Modeling Guidelines & Procedures: <http://www.comnet.org>
- Design Intelligence LLC. (2017, November 27). US Architecture Firm Statistics. Retrieved from <https://www.di.net/almanac/stats/firm-statistics-architecture/>
- Goel S, M Rosenberg C Eley 2017. ANSI/ASHRAE/IES Standard 90.1-2016 Performance Rating Method Reference Manual. PNNL-26917, Pacific Northwest National Laboratory, Richland, Washington.
- Mella, G., & Holdridge, H. G. (2017). 2030 by the numbers, The 2016 summary of the AIA 2030 commitment. Washington, DC: American Institute of Architects. Retrieved November 27, 2017, from [http://aiad8.prod.acquia-sites.com/sites/default/files/2017-07/2016BytheNumbers-AIA2030CommitmentFinal\\_0.pdf](http://aiad8.prod.acquia-sites.com/sites/default/files/2017-07/2016BytheNumbers-AIA2030CommitmentFinal_0.pdf)
- Thornton B, M Rosenberg, E Richman, W Wang, Y Xie, J Zhang, H Cho, V Mendon, R Athalye, and B Liu. 2011. Achieving the 30% Goal: Energy and Cost
- US Department of Energy. (2016). Building Technology Office Multi-Year Program Plan. Washington, DC: US Department of Energy. Retrieved November 27, 2017, from [https://energy.gov/sites/prod/files/2016/02/f29/BTO\\_MYPP\\_2016.pdf](https://energy.gov/sites/prod/files/2016/02/f29/BTO_MYPP_2016.pdf)