

**72nd Annual Meeting of the APS Division of Fluid Dynamics**  
**Saturday–Tuesday, November 23–26, 2019; Seattle, Washington**

**Session C09: Turbines: General**

8:00 AM–10:10 AM, Sunday, November 24, 2019

Room: 213

Chair: Brent Houchens, Sandia National Laboratories

**Abstract: C09.00003 : LES of microscale winds in complex configurations.\***

8:26 AM–8:39 AM

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This contribution concerns wall modeled large eddy simulations (WMLES) of turbulent winds in complex geometries that are relevant for wind energy problems: either in the built environment (e.g. generic buildings) or complex terrains (e.g. Askervein Hill). This work is performed in the framework of developing simplified operational models to be used for wind turbine siting. It is proposed to investigate the influence of the wall modeling strategy and the turbulent inflow boundary condition on the flow diagnostics relevant for wind turbine siting (local velocity and turbulence profiles). The validity and quality of an original turbulence inflow generation method are also assessed. This boundary condition is based on the algorithm of Mann and generates realistic atmospheric turbulence with a prescribed spectrum and lengthscale.

\*Belgian Walloon Region, Mecatech cluster, Pope project