## Accepted Manuscript

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Mousa Marzband, Fatemeh Azarinejadian, Mehdi Savaghebi, Edris Pouresmaeil, Josep M. Guerrero, Gordon Lightbody

PII: S0960-1481(18)30326-4

DOI: 10.1016/j.renene.2018.03.021

Reference: RENE 9890

To appear in: Renewable Energy

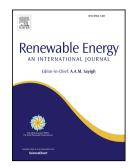
Received Date: 9 November 2017

Revised Date: 11 February 2018

Accepted Date: 12 March 2018

Please cite this article as: Marzband M, Azarinejadian F, Savaghebi M, Pouresmaeil E, Guerrero JM, Lightbody G, Smart Transactive energy framework in grid-connected multiple home microgrids under independent and coalition operations, *Renewable Energy* (2018), doi: 10.1016/j.renene.2018.03.021.

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## Smart Transactive Energy Framework in Grid-connected Multiple Home Microgrids under Independent and Coalition Operations

Mousa Marzband<sup>a,b</sup>, Fatemeh Azarinejadian<sup>b</sup>, Mehdi Savaghebi<sup>d</sup>, Edris Pouresmaeil<sup>c</sup>, Josep M. Guerrero<sup>d</sup>, Gordon Lightbody<sup>e,f</sup>

 <sup>a</sup>Faculty of Engineering and Environment, Department of Maths, Physics and Electrical Engineering, Northumbria University Newcastle, Newcastle upon Tyne NE1 8ST, UK
 <sup>b</sup>Dept. of Electrical Engineering, Lahijan Branch, Islamic Azad University, Lahijan, Iran
 <sup>c</sup>Dept. of Electrical Engineering and Automation, Aalto University, 02150 Espoo, Finland
 <sup>d</sup>Dept. of Energy Technology, Aalborg University, DK-9220 Aalborg East, Denmark
 <sup>e</sup>Control and Intelligent Systems Group, Department of Electrical and Electronic Engineering, UCC, College Rd., Cork, Ireland
 <sup>f</sup>SFI Research Centre for Marine and Renewable Energy, MaREI, Ireland

## Abstract

This paper presents a smart Transactive energy (TE) framework in which home microgrids (H-MGs) can collaborate with each other in a multiple H-MG system by forming coalitions for gaining competitiveness in the market. Profit allocation due to coalition between H-MGs is an important issue for ensuring the optimal use of installed resources in the whole multiple H-MG system. In addition, considering demand fluctuations, energy production based on renewable resources in the multiple H-MG can be accomplished by demand-side management strategies that try to establish mechanisms to allow for a flatter demand curve. In this regard, demand shifting potential can be tapped through shifting certain amounts of energy demand from some time periods to others with lower expected demand, typically to match price values and to ensure that existing generation will be economically sufficient. It is also possible to obtain the maximum profit with the coalition formation. In essence the impact of the consumption shifting in the multiple H-MG schedule can be considered while conducting both individual and coalition operations. A comprehensive simulation study is carried out to reveal the effectiveness of

*Email address:* mousa.marzband@northumbria.ac.uk Corresponding author (Mousa Marzband)

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