Use of Smart Meters to Supply Local Energy in Fintry

CARES Infrastructure and Innovation Fund

Feasibility Report Presentation

20-08-15

Introduction

- Veitch Cooper Ltd
  - Renewable Energy Infrastructure and Technology Developer
  - Independent Consultancy established 2014
  - Framework adviser for Local Energy Scotland CARES projects

- Sandy Wito
  - Associate with Veitch Cooper consortium
  - Independent consultant with Wito Energy
  - 22 years experience in Energy Industry

Background

Fintry

- 335 households, 700 Residents
- Ambition to become more sustainable and use local resources
- Engaged in local energy projects and energy saving
- Residents with oil/lpg heating and fuel poverty problems

Strathendrick AD Plant

- 1.1 MWe export independent AD plant
- Uses local silage and distillery waste to produce methane
- Exports electricity and produces fertiliser and animal bedding
- Potential for expansion and use of exhaust heat

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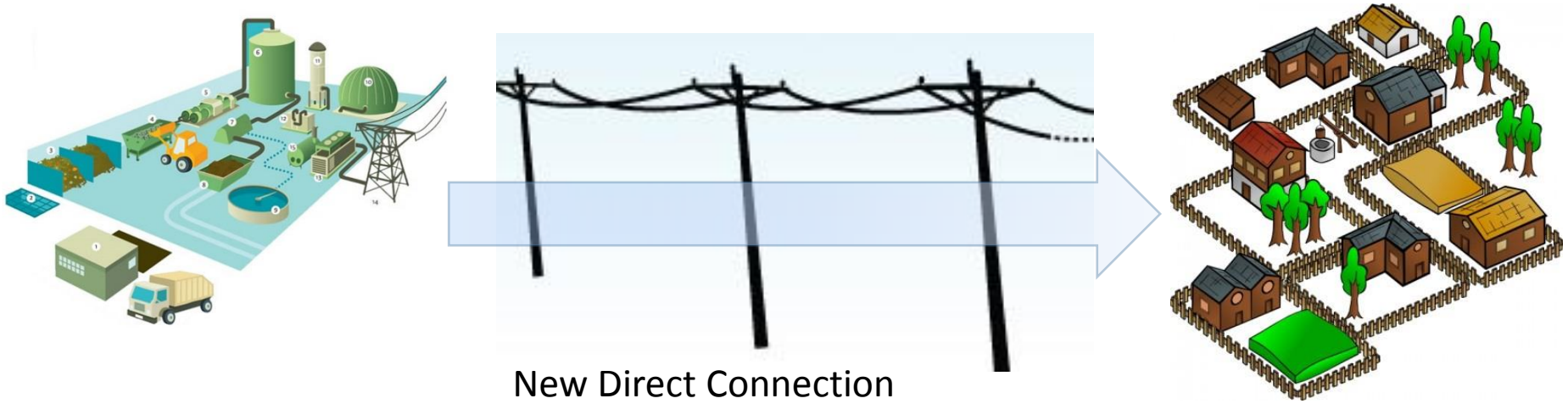
Initial Idea



New Direct Connection

- Idea to directly connect AD plant to the village and bypass grid
- Technically possible but difficult in practice
  - Expense of new line construction, planning consent and wayleaves
  - Adoption of local network and provision of back-up power
  - Requirement for agreement from every household and regulatory protection for consumers

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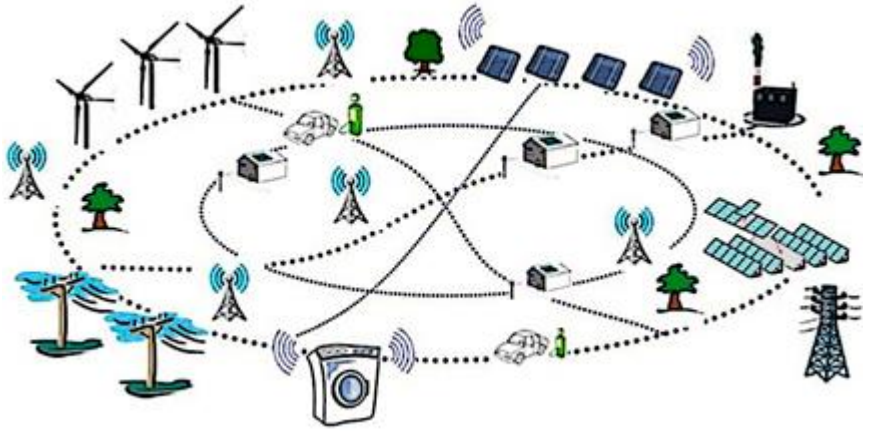
Alternative Proposal

- Direct connection not achievable so create ‘virtual’ connection



- Install ‘Smart Meters’ to measure and record resident’s consumption
- Combine with network management and generator control to create local ‘smart grid’
- Match consumption and generation through time to create link

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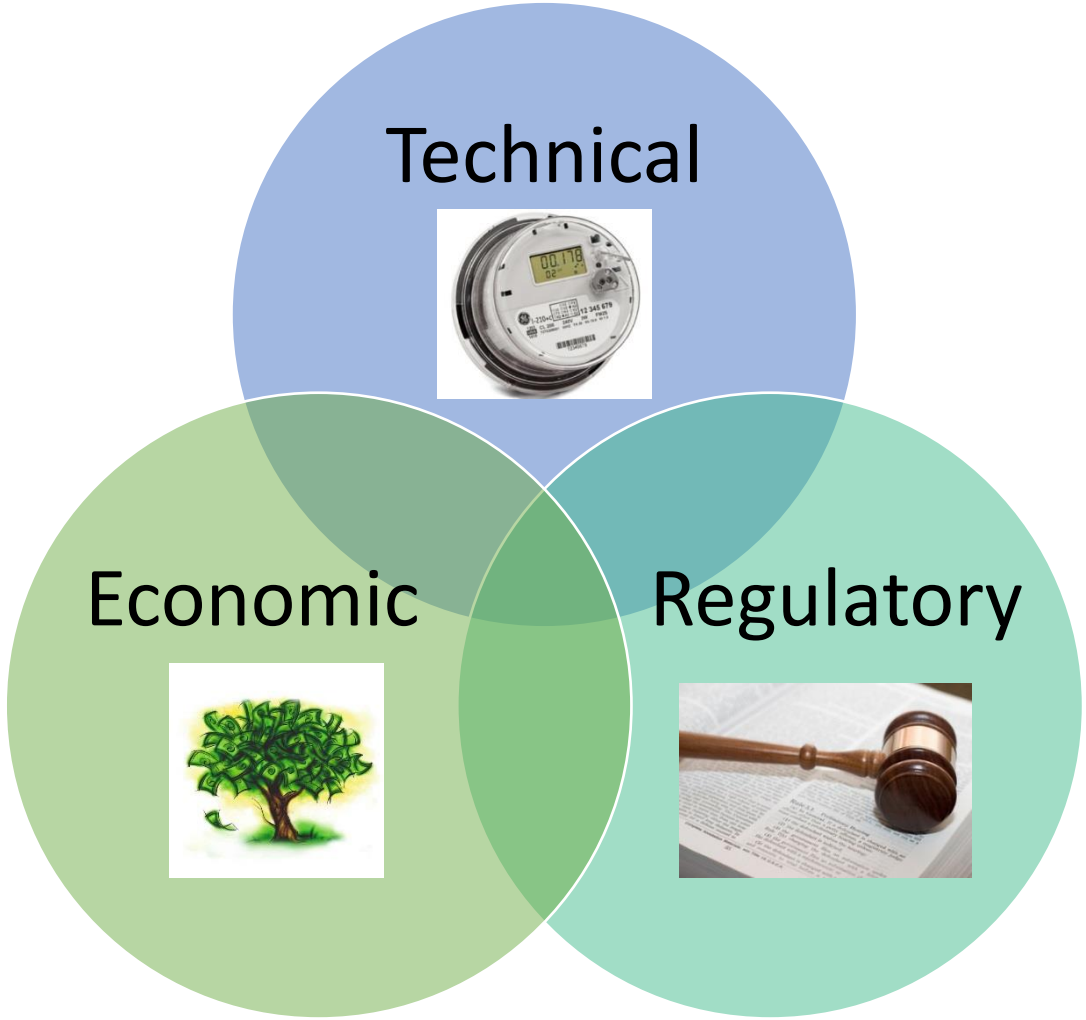
Feasibility of Proposal

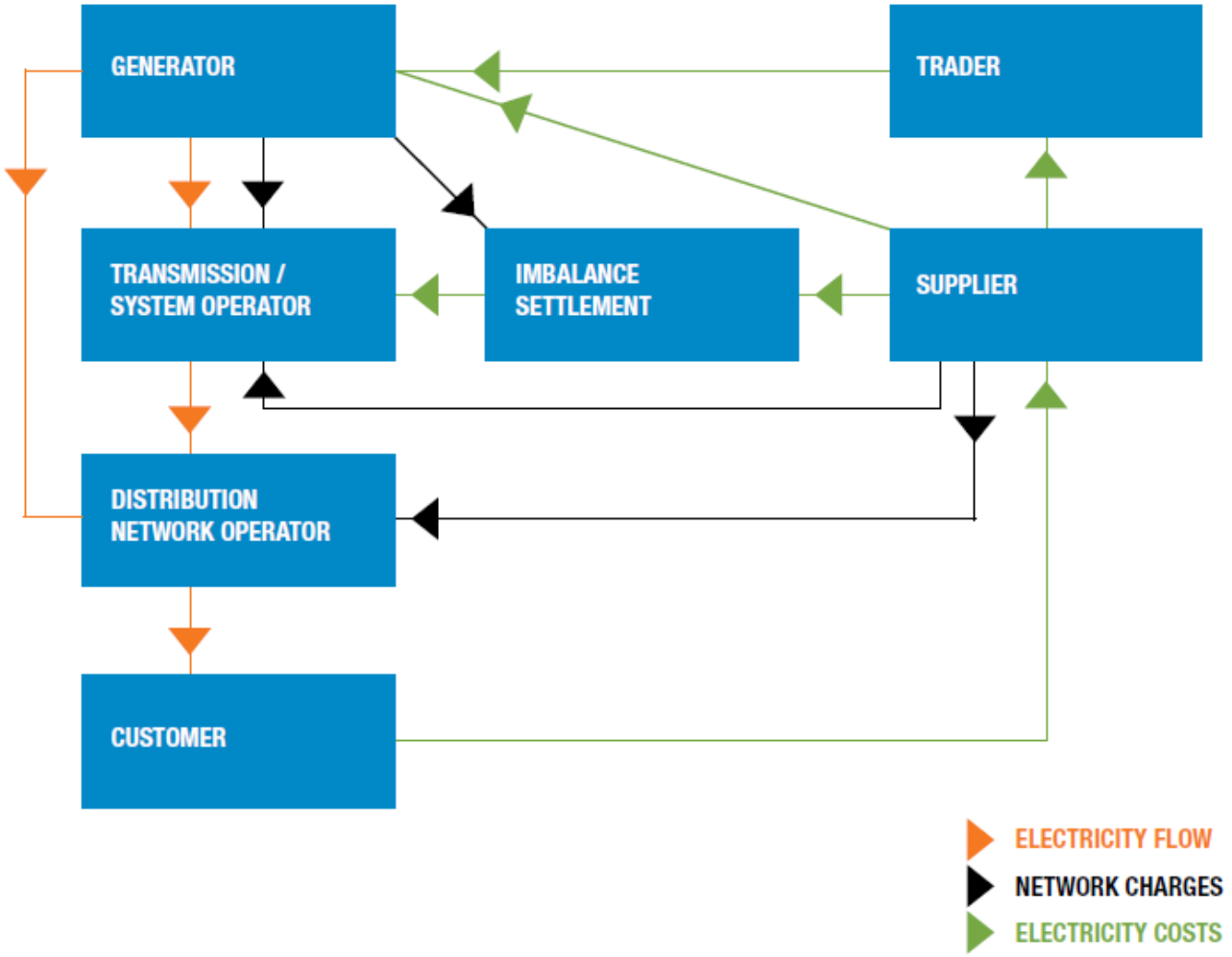
- Three areas of feasibility to examine :



Technical Feasibility

- Smart Meters
  - Smart meters compulsory by 2020 – to be funded by electricity suppliers
  - Offer remote reading and recording of energy use through time
  - Residents get in-home display to provide information on usage and cost
  - Meters available that offer control of appliances and sockets
- Active Network Management
  - Control software that aims to ensure grid constraints not breached
  - Controls generation to avoid local surplus and/or load to avoid local deficit
  - Lower cost than physical expansion of distribution network
- Similar Projects already in operation or development:
  - Shetland and Orkney smart grids
  - LECF funded ACCESS project on Mull, ARC project in Scottish Borders

Regulatory Feasibility



- Current market designed to promote competition and reduced costs
- Restrictions on suppliers offering tariffs on a discriminatory basis
- Network operators able to recover all costs, little incentive to take risks or innovate
- Ofgem recognising that market needs to change and evolve with technology

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Economic Feasibility

- Costs
  - £500 per home for smart meter
  - £6k per home for ASHP
  - £150k for ANM software
- Total: £1.9m for entire village

- Benefits
  - £70 per household saving in electricity from smart meter each year
  - £5-600 saving in heating costs by converting to heat pump
  - £1.3m total RHI benefit
- Total:£3.3m for entire village

- Potential benefit to Strathendrick AD in increased revenue and output
- Benefits to SSE and its customers from £4-700k avoided grid expansion costs
- 1000t CO_2 saving p.a. allocated to village

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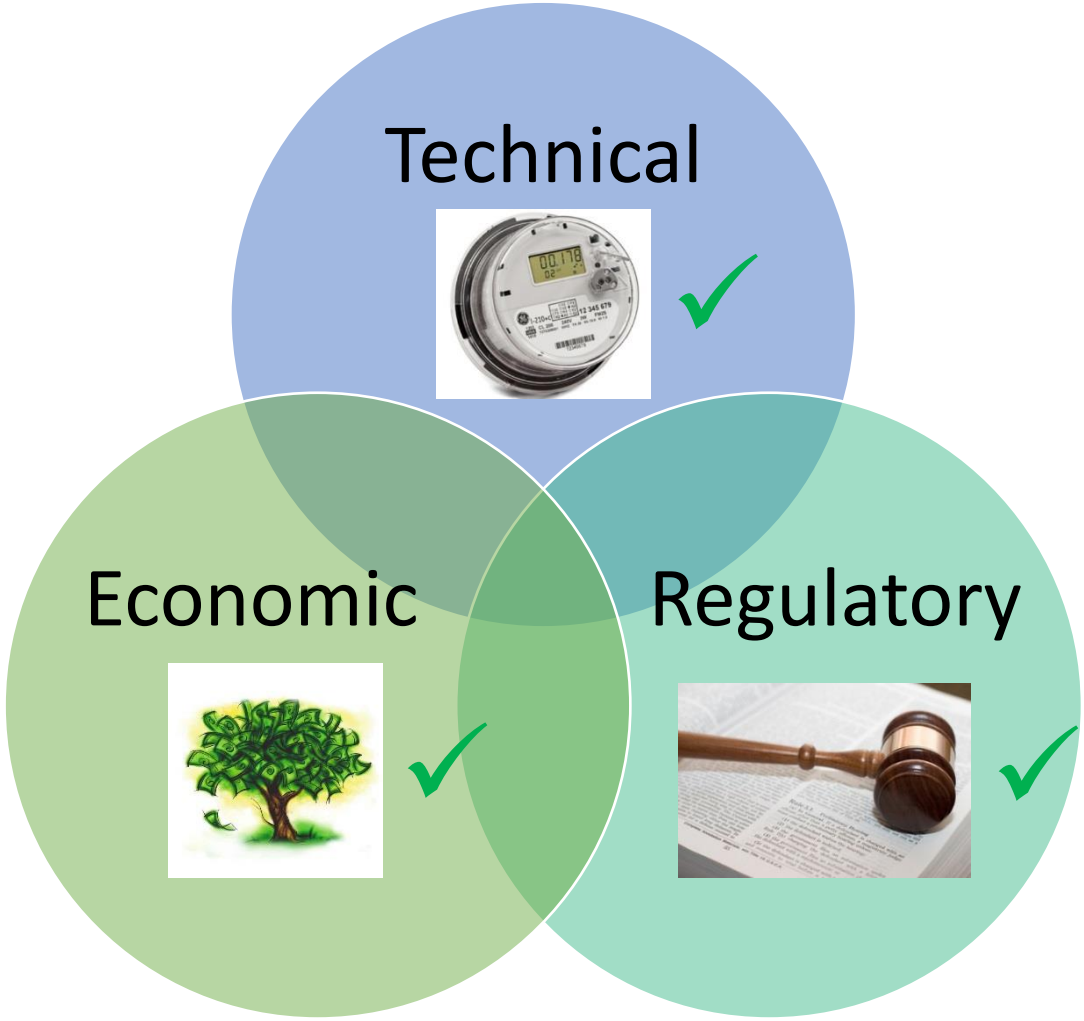
Conclusions

- Technology exists and is proven
- Regulatory barriers can be overcome
- Project brings potential economic benefits to:
  - Fintry Residents
  - Strathendrick AD plant
  - SSE network and customers
- Lower risk and smoother implementation with additional funding and support



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Next Steps

- CARES IIF funded Feasibility report delivered
- CARES Local Energy Challenge Fund awarded July 2015, £25k granted
- SSE engaged as Distribution Network Operator
- Veitch Cooper in discussions with other partners:
  - Bulb Energy as Independent Supplier offering settlement and billing services
  - Energy Assets/vCharge as Smart Meter and network control software supplier
- Community engagement by FDT key to getting residents on board
- Next stage LECF application to be submitted by February 2016
  - Provides for £1-6m of funding for implementation

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