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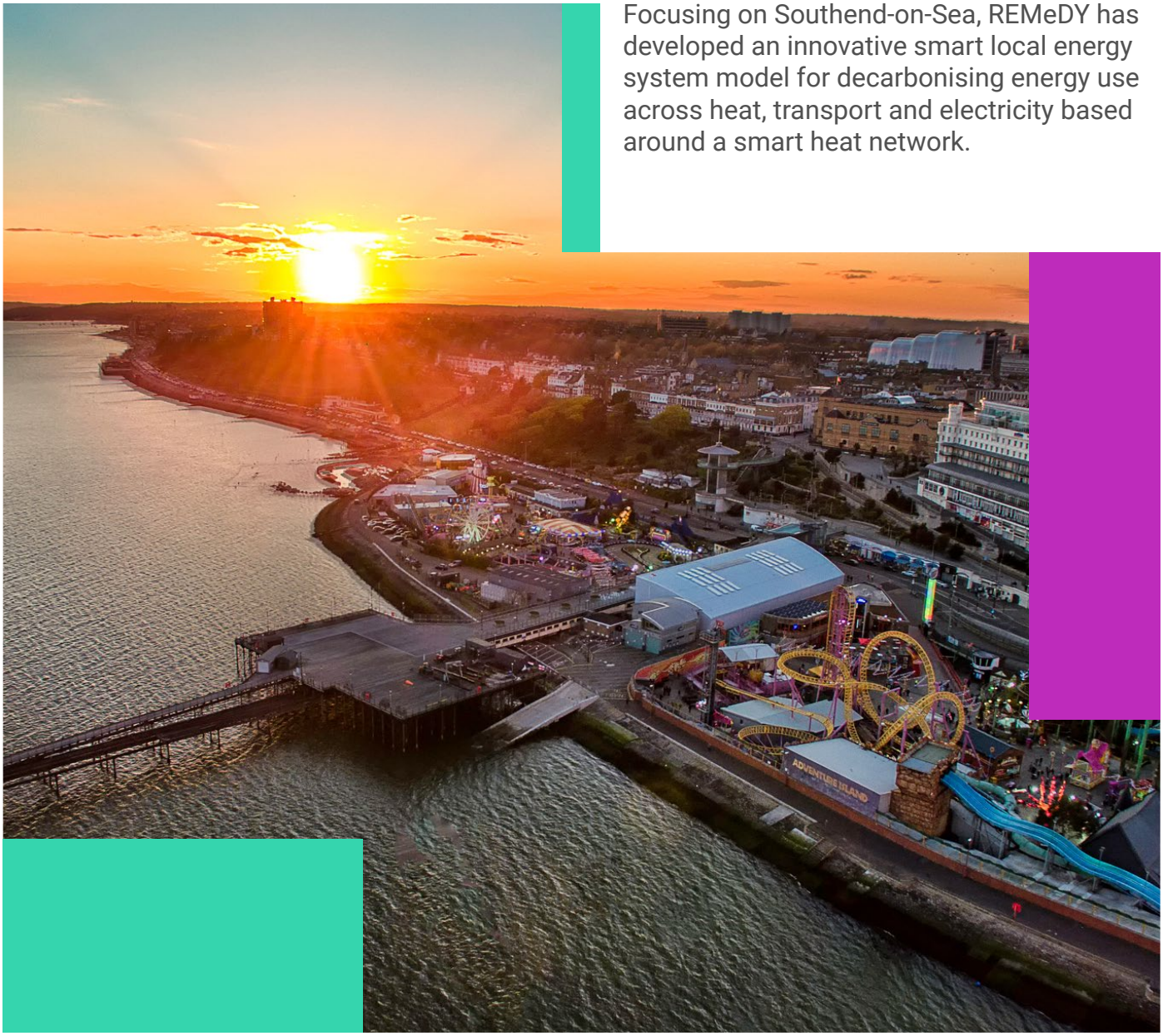
Prospering from the Energy Revolution

Project REMeDY

Project fact sheet



Focusing on Southend-on-Sea, REMeDY has developed an innovative smart local energy system model for decarbonising energy use across heat, transport and electricity based around a smart heat network.

The Prospering from the Energy Revolution challenge programme ran from 2018 to 2023.
For more in-depth information on the programme and the projects see:
https://www.ukri.org/what-we-offer/browse-our-areas-of-investment-and-support/prospering-from-the-energy-revolution/

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Project REMeDY

Dates:
March 2020 – May 2022

UKRI funding:
£2.3m

Link:
https://www.netzeroremedy.uk/

Project partners:
Southend-on-Sea City Council (lead)
FutureGov
Imperial College London
Places for People Group
SMS
University of East Anglia
Vital Energi

SLES components:
Heat networks
Heat pumps
Solar photovoltaics
Batteries

What is the project?

REMeDY has developed an innovative smart local energy system (SLES) model for decarbonising energy use across heat, transport and electricity. The model is based around a smart heat network combined with a private wire electricity network linking renewables generation and battery storage. The REMeDY model optimises energy production, storage and use and has been shown to be a viable low carbon energy solution for new domestic and commercial developments. The model responds to the needs of stakeholders across a building's lifecycle including developers, social housing providers, owners and tenants. It is informed by a detailed review of the energy needs and opportunities in and around Southend-on-Sea. REMeDY has also created a project pipeline, exploring the potential to deploy the model in new build and retrofit real-world developments.

What has been delivered? What has been successful?

- ✓ A SLES model capable of supporting decarbonisation across heat, electricity and transport that is regulatorily compliant and commercially investable.
- ✓ Eight REMeDY solutions explored for real-world housing / commercial building developments with one currently being taken forward with project developers.
- ✓ Detailed insights into the Southend-on-Sea energy system through an energy and carbon review.
- ✓ Extensive engagement with local citizens through a range of innovative approaches including community ECO days and a net zero superhero programme engaging residents over 10 weeks.

Barriers encountered and outcomes

Barrier	Licensing requirements for electricity network operation and supply mean that it is challenging to find a model that includes the supply of domestic electricity demand within the REMeDY model.
Outcome	Domestic supply of electricity has been descoped from the solution leading to a loss of some value, however domestic and commercial supply of heat and the integration of renewable electricity generation on a private wire to supply communal heat pumps remain integrated.
Barrier	Significant practical and contractual constraints to deploying REMeDY in retrofit projects.
Outcome	The deployment focus of the REMeDY model has moved to new-build developments where the infrastructure and commercial agreements can be built in from the start.
Barrier	The costs and benefits of a REMeDY solution for developers, landlords, tenants and owners do not always align with each other or with wider societal value.
Outcome	REMeDY placed significant focus on understanding and mapping out the costs and benefits to each stakeholder involved in the lifecycle of a building, with the final model designed to meet needs throughout the chain.

Impacts		
	Forecast GHG savings in 2032:	6.4% (Range: -8.0% to 15.9%)
	Forecast energy and network savings in 2032:	£0.08m (Range: £0.071m to £0.088m)
	Match funding:	£2.6m

Top lessons learnt

1. Low carbon smart energy systems based on heat networks can offer a competitive alternative to heat pumps.
2. The incentives on building developers are not aligned with the adoption or development of smart energy networks.
3. REMeDY has the potential to offer a lower cost pathway compared with other zero carbon options for many existing buildings, particularly for buildings with low energy efficiency. But mechanisms are needed to recover costs over longer timescales.

What's next?

- REMeDY solutions being taken forward in one newbuild mixed domestic and commercial development.
- Southend-on-Sea City Council will look for opportunities to reflect the learning from the project and the potential for REMeDY solutions within the net zero energy strategy currently being developed.

Heat evaluated. Cost and carbon values are based on impact of a REMeDY case study project against a counterfactual of heat met by air source heat pumps. For more information on the methodology used to estimate carbon and cost impacts see https://es.catapult.org.uk/report/bills-and-carbon-impact-of-smart-local-energy-systems/.