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/
# 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

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**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.

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**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.

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**Barriers encountered and outcomes**

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<tr>
<th>Barrier</th>
<th>Outcome</th>
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<tr>
<td>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.</td>
<td>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.</td>
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<tr>
<td>Significant practical and contractual constraints to deploying REMeDY in retrofit projects.</td>
<td>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.</td>
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<tr>
<td>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.</td>
<td>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.</td>
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**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

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**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.

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**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.

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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/.