The use of whole systems analysis in local decisionmaking

Chris Grainger, GLA

GLA environment policy and delivery schemes

RE:NEW

RE:FIT

DEEP

London Boiler Cashback Scheme

Using analysis – 1. Establishing targets

The GLA group has reduced emissions from its fleet and operations from 189 ktCO2e in 2012/13 to 160 ktCO2e in 2015/16 and is committed to a 60 per cent reduction on 1990 levels by 2025.

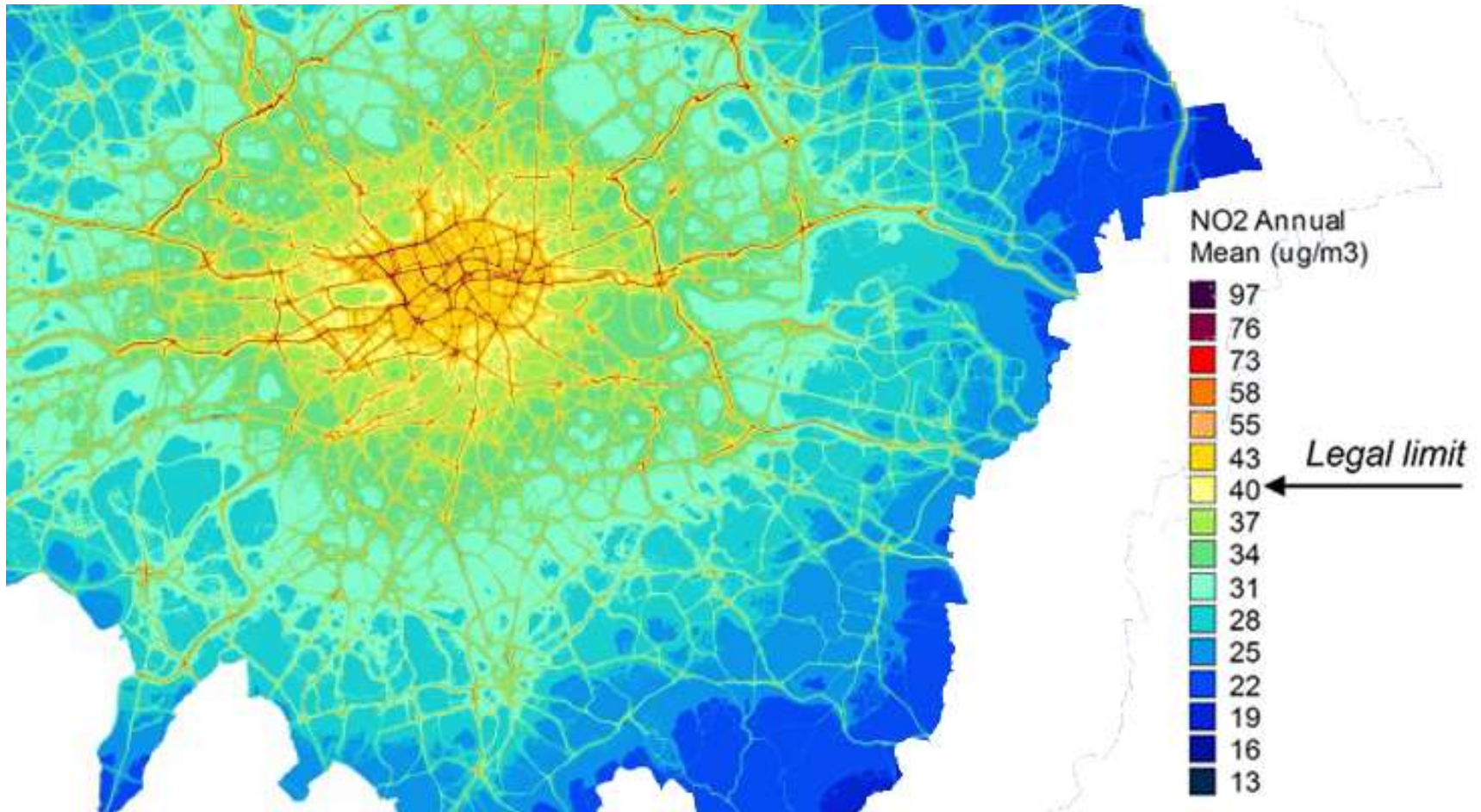emissions footprint of London's workplaces will need to account for only 1.6 MtCO2e reducing from around 16.6 MtCO2e.

In meeting the zero-carbon target a minimum on-site reduction of at least 35 per cent beyond Building Regulations

all taxis and private hire vehicles to be zero emission capable by 2033

The Mayor wants to achieve an overall 65 per cent municipal waste recycling rate (by weight) by 2030 in London."

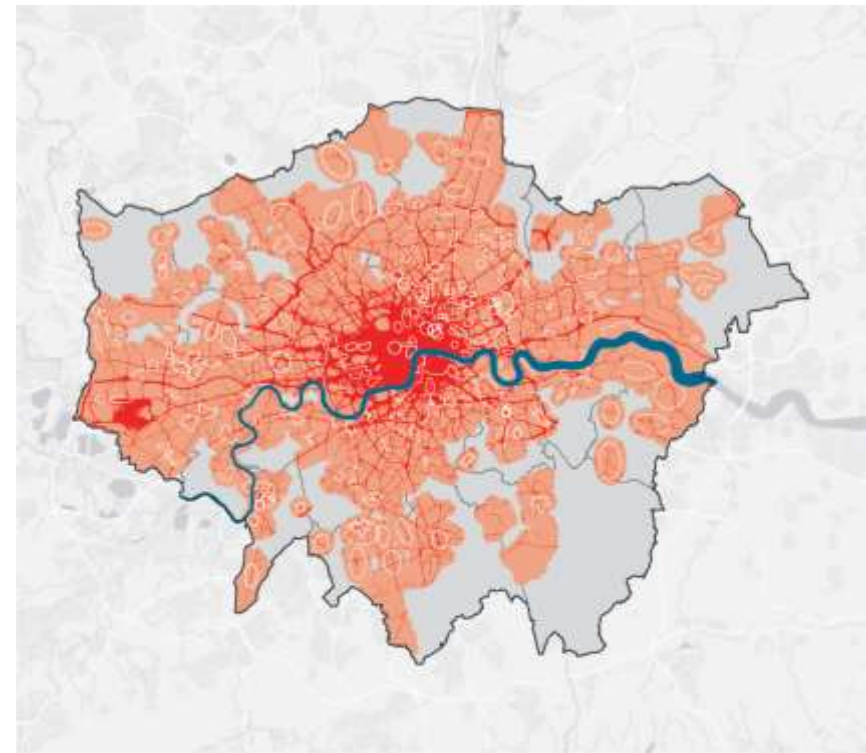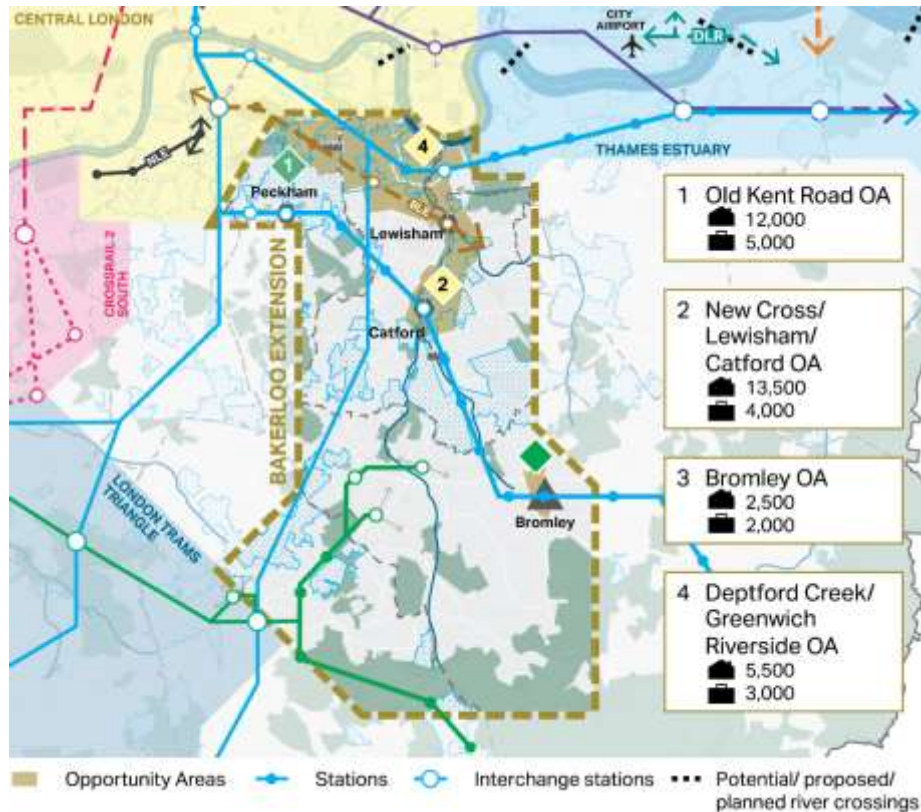Cutting this waste stream by 20 per cent could take about £42m off London's waste disposal bill

Using analysis – 2. Mapping barriers

Using analysis – 3. Mapping opportunities

Opportunity Areas
1 Old Kent Road OA
2 New Cross/ Lewisham/ Catford OA
3 Bromley OA
4 Deptford Creek/ Greenwich Riverside OA

Opportunity Areas — Stations — Interchange stations — ••• Potential/ proposed/ planned river crossings

Heat Network Priority Areas and Heat Density in London
Relative heat demand based on fuel use kWh/m²/year

Heat Network Priority Areas
Areas where legal air quality limits are exceeded
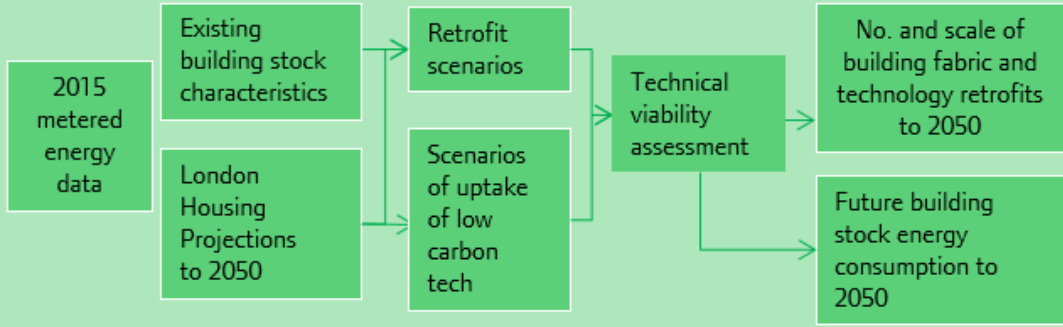Local Authority Heat Network Studies

Source: GLA Environment

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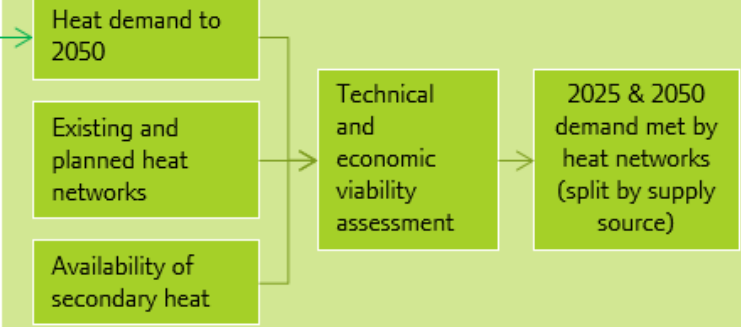
Modelling London's heat network priority areas
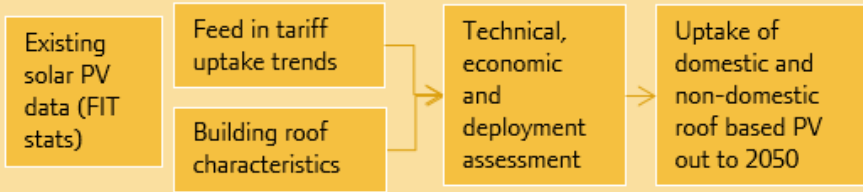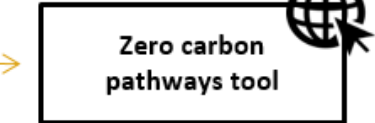
Zero carbon pathways model

Building model

| 2015 metered energy data | Existing building stock characteristics | Retrofit scenarios | Technical viability assessment | No. and scale of building fabric and technology retrofits to 2050 |

London Housing Projections to 2050 → Scenarios of uptake of low carbon tech → Technical viability assessment → Future building stock energy consumption to 2050

Heat network model

Heat demand to 2050

Existing and planned heat networks

Availability of secondary heat

Technical and economic viability assessment

2025 & 2050 demand met by heat networks (split by supply source)

Solar PV model

Existing solar PV data (FIT stats)

Feed in tariff uptake trends

Building roof characteristics

Technical, economic and deployment assessment

Uptake of domestic and non-domestic roof based PV out to 2050

4 scenarios

4 scenarios

4 scenarios

Zero carbon pathways tool

3 scenarios

Transport model

Provided by TfL, three scenarios for electric vehicle uptake and mode shift
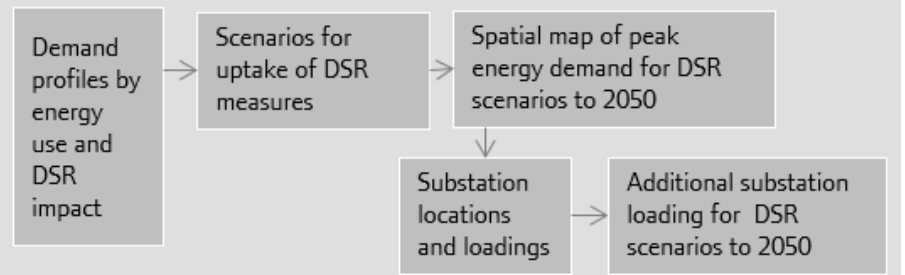
Industrial model

Emissions from industrial processes based on Environment Agency and EUETS reporting

LAEI

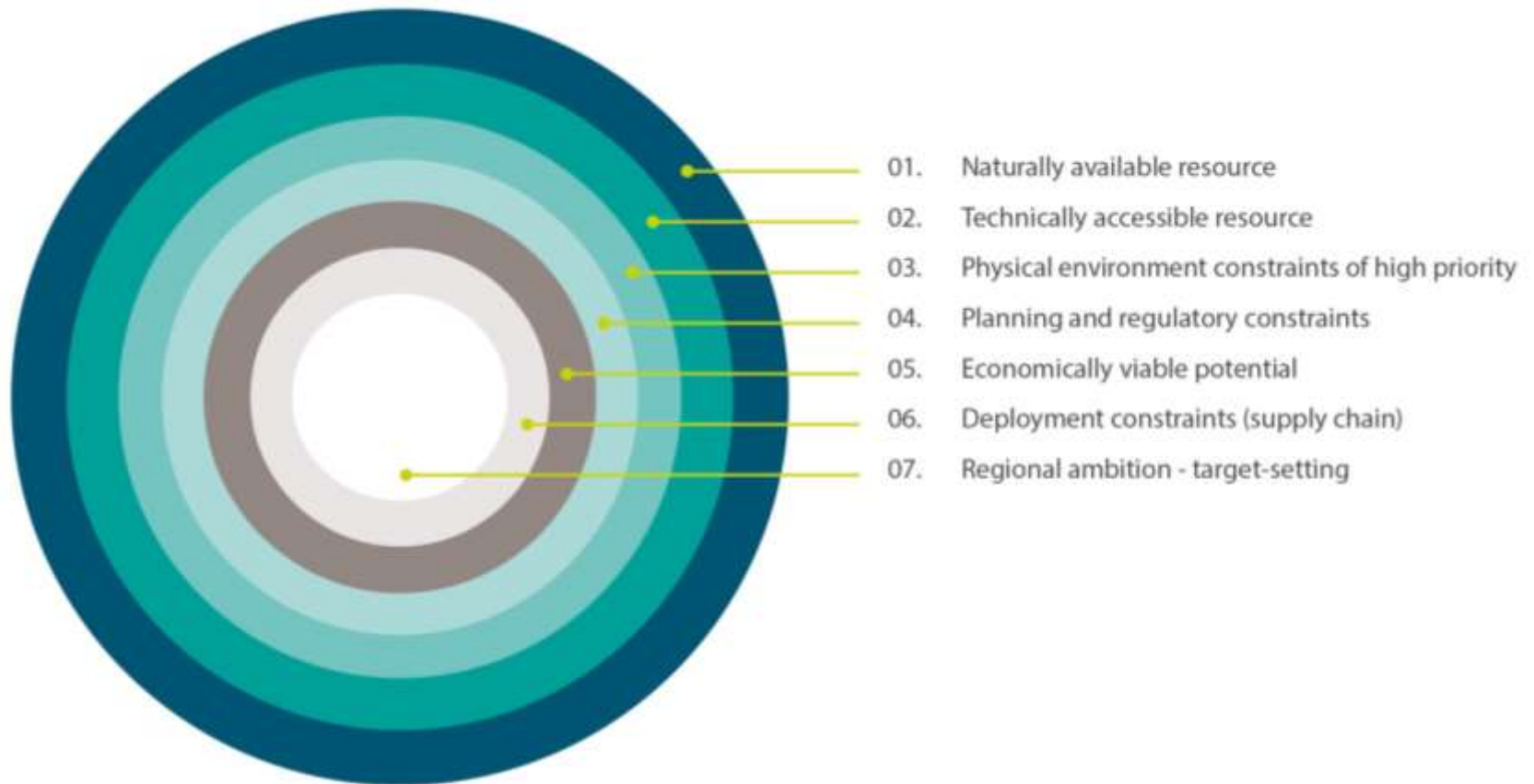Non-road transport emissions (aviation and mobile machinery) for the London Atmospheric
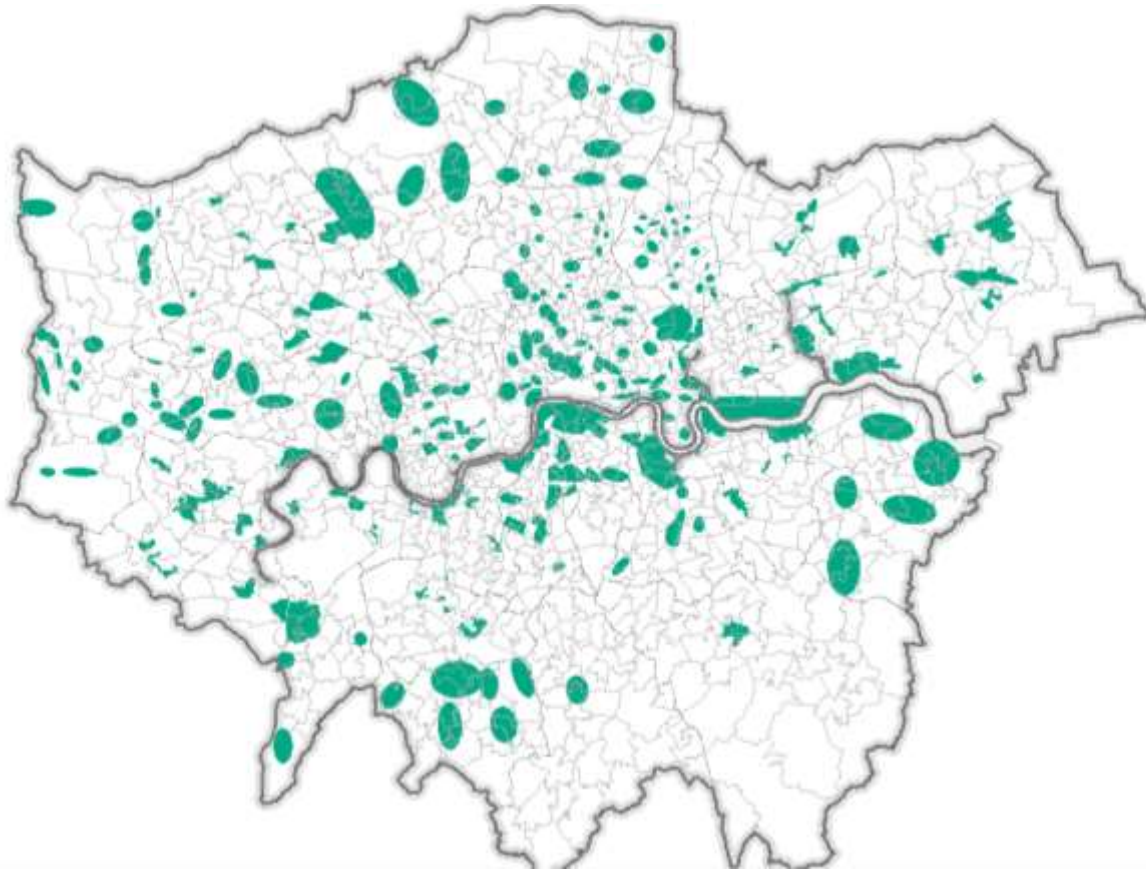
Power model

Demand profiles by energy use and DSR impact

Scenarios for uptake of DSR measures

Spatial map of peak energy demand for DSR scenarios to 2050

Substation locations and loadings

Additional substation loading for DSR scenarios to 2050

The Onion Ring

01. Naturally available resource
02. Technically accessible resource
03. Physical environment constraints of high priority
04. Planning and regulatory constraints
05. Economically viable potential
06. Deployment constraints (supply chain)
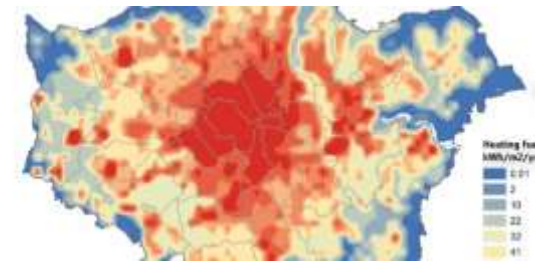07. Regional ambition - target-setting
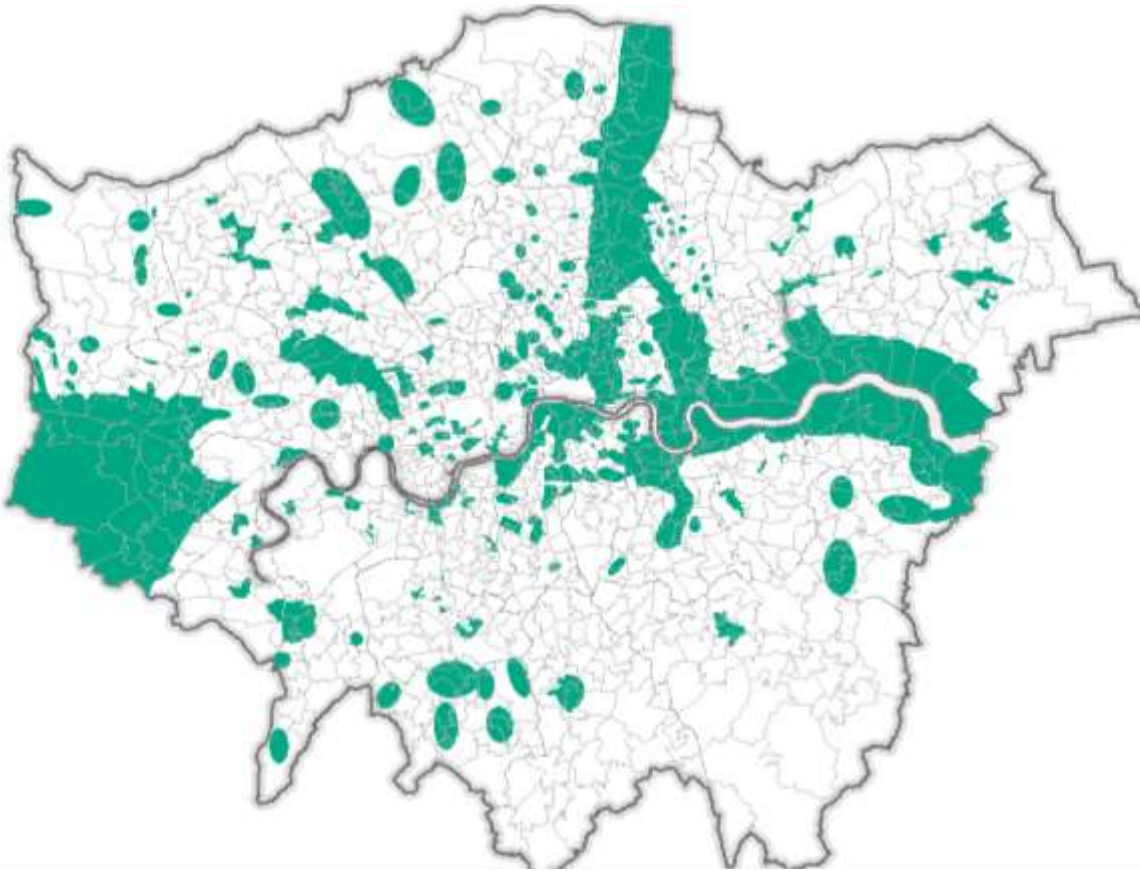
1. DEMAP areas

1. DEMAP areas
2. Opportunity areas

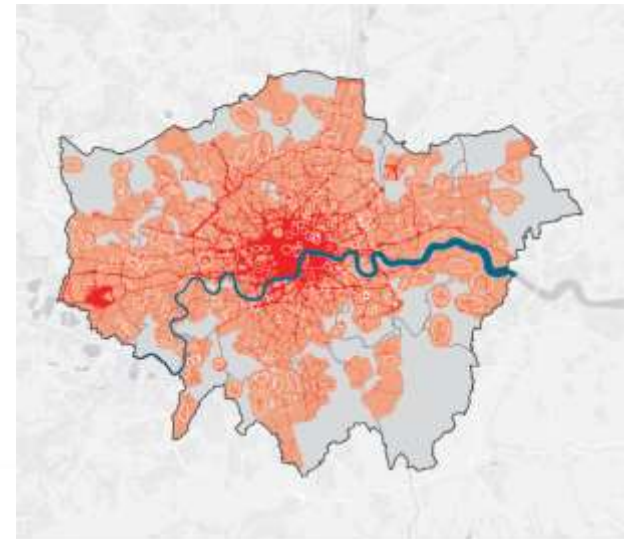1. DEMAP areas
2. Opportunity areas
3. London energy plan

London heat map

Secondary heat study
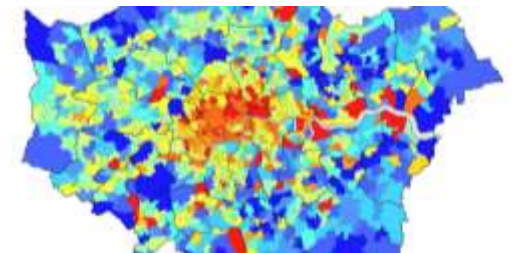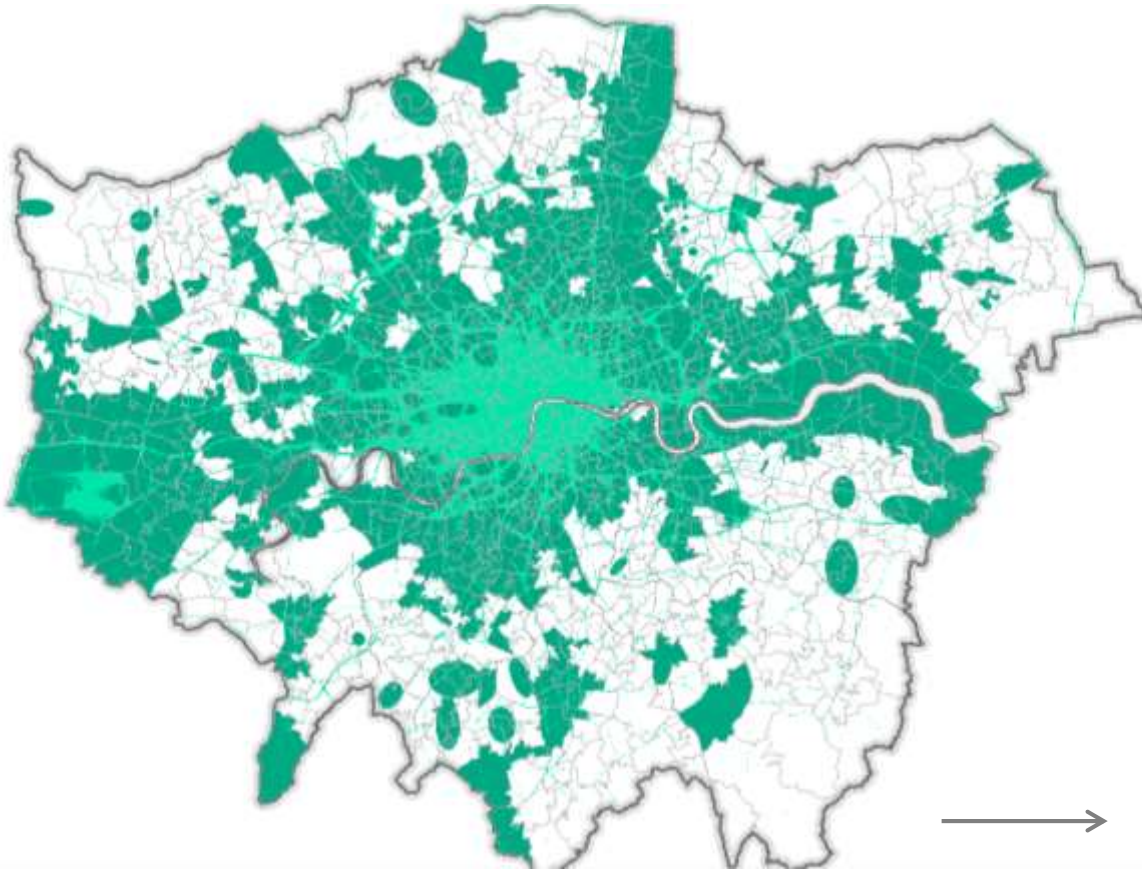
1. DEMAP areas
2. Opportunity areas
3. London energy plan
4. Air quality zones

Heat Network Priority Areas and Heat Density in London
Relative heat demand based on fuel use kWh/m²/year

● Heat Network Priority Areas

● Areas where legal air quality limits are exceeded

● Local Authority Heat Network Studies

Source: GLA Environment

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Value in simplicity

Value in simplicity

3.2million homes x 30 years to 2050 = implied trajectory of 100,000 retrofits a year
Re:New Phase 3 = ~6,000 homes annually = 6% of city retrofit requirements

Vs.

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+
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Using real data
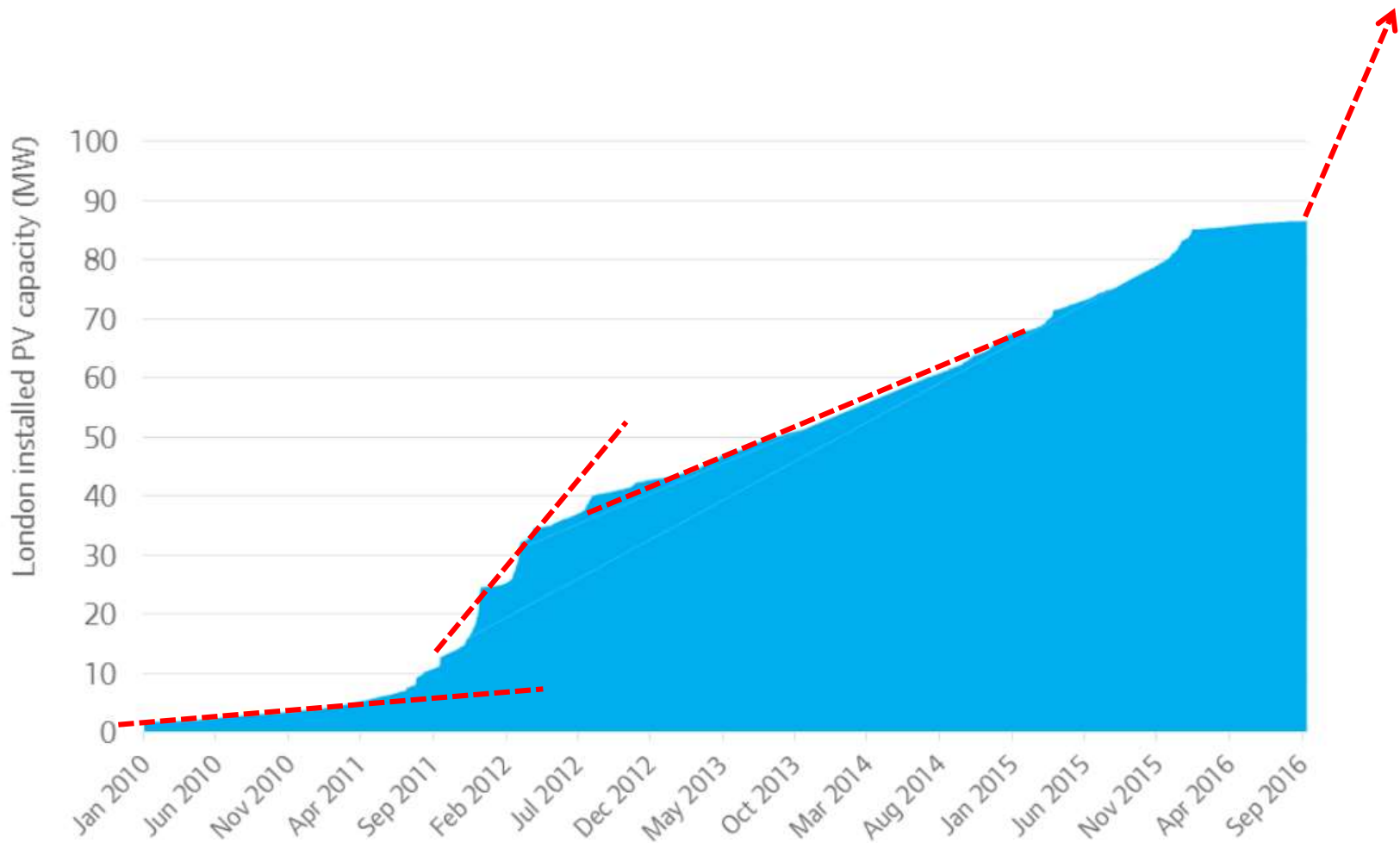
What next?
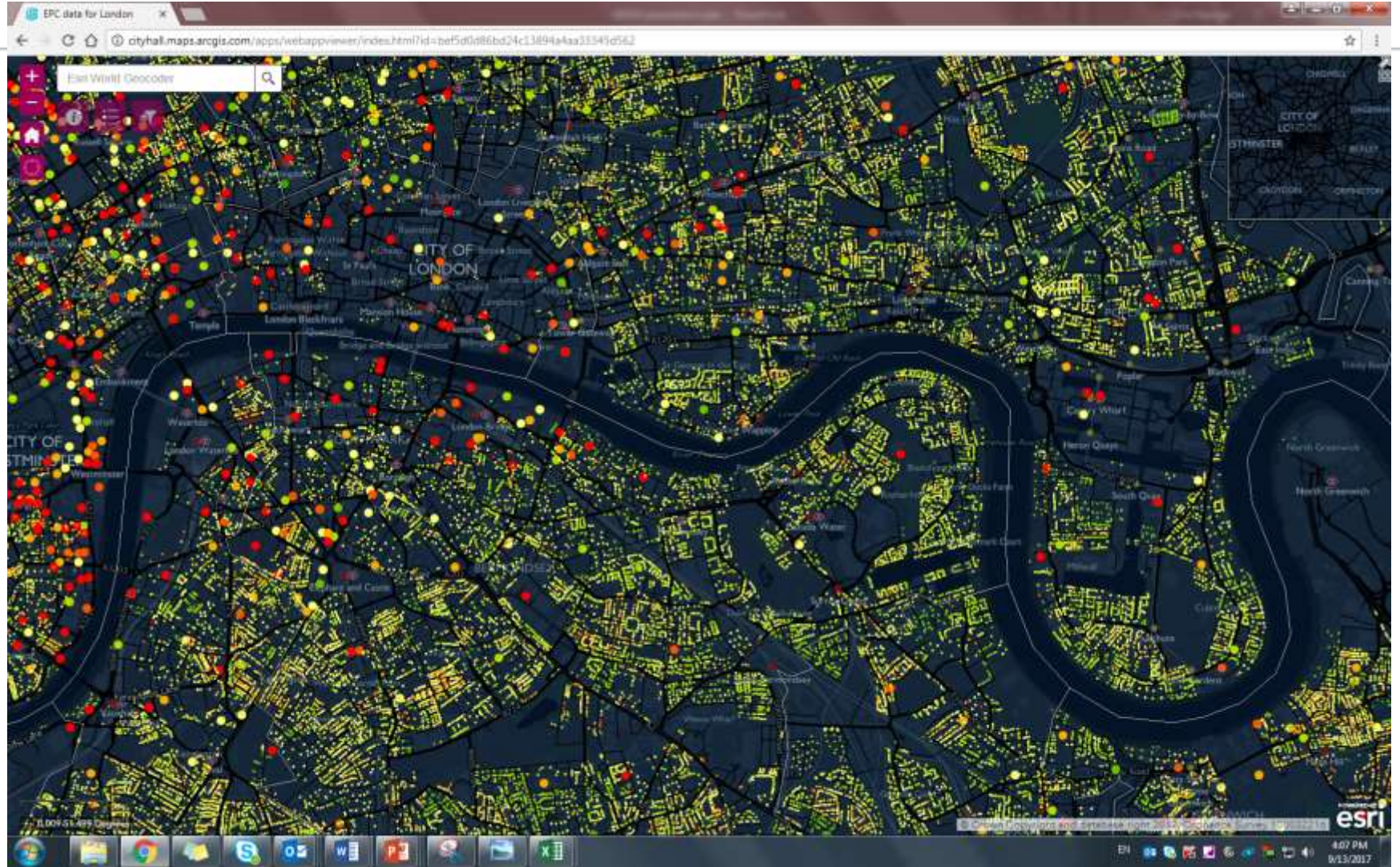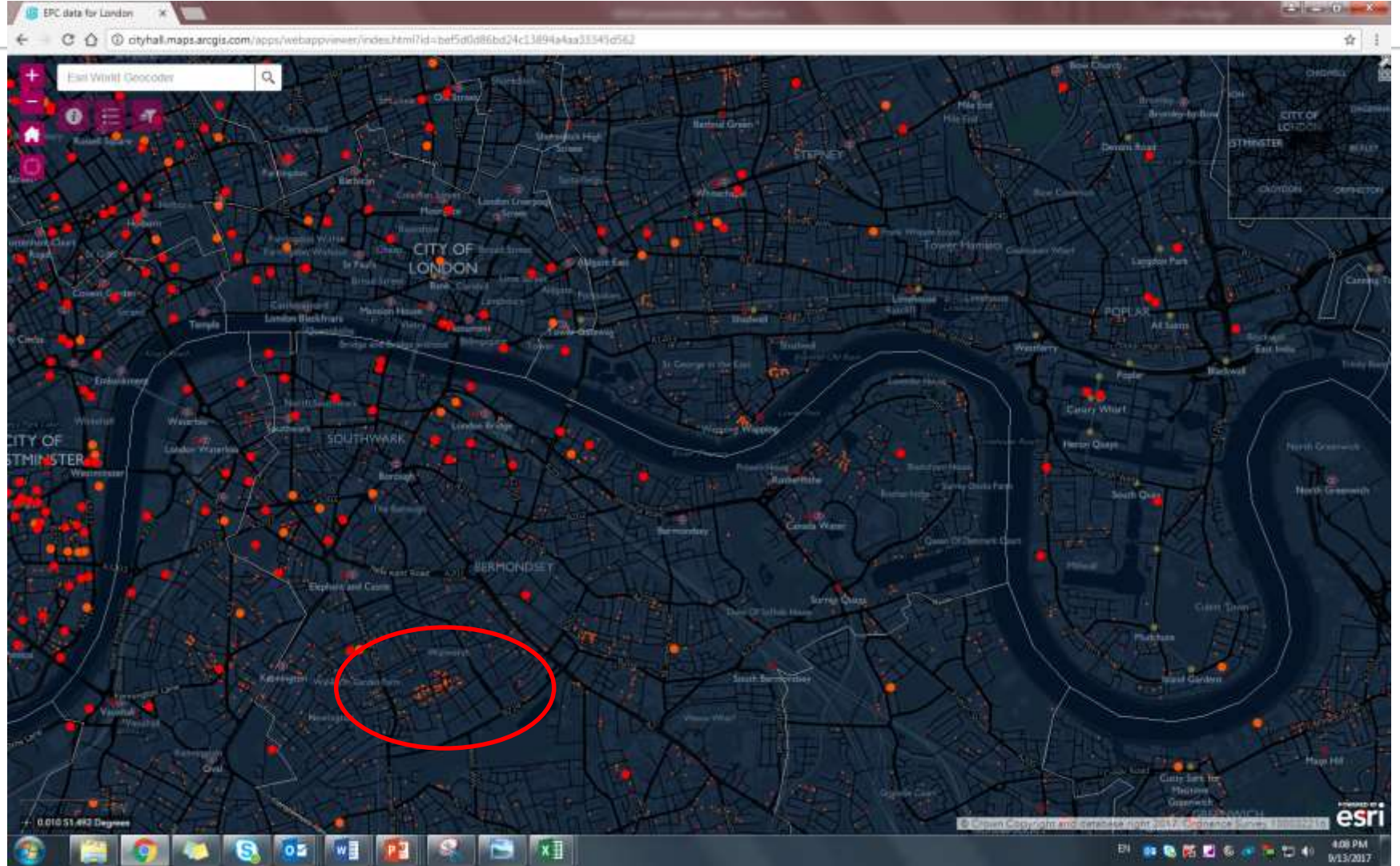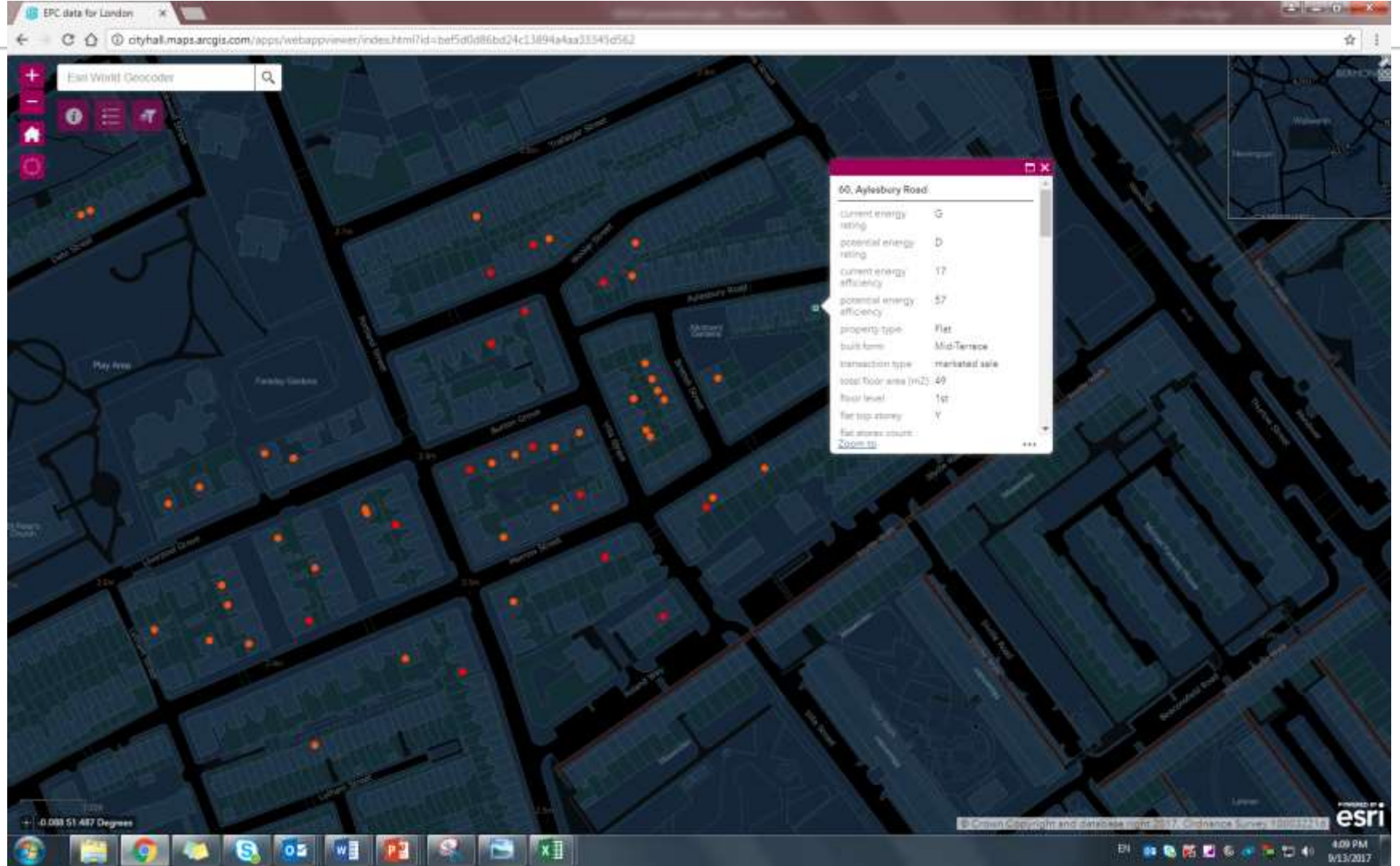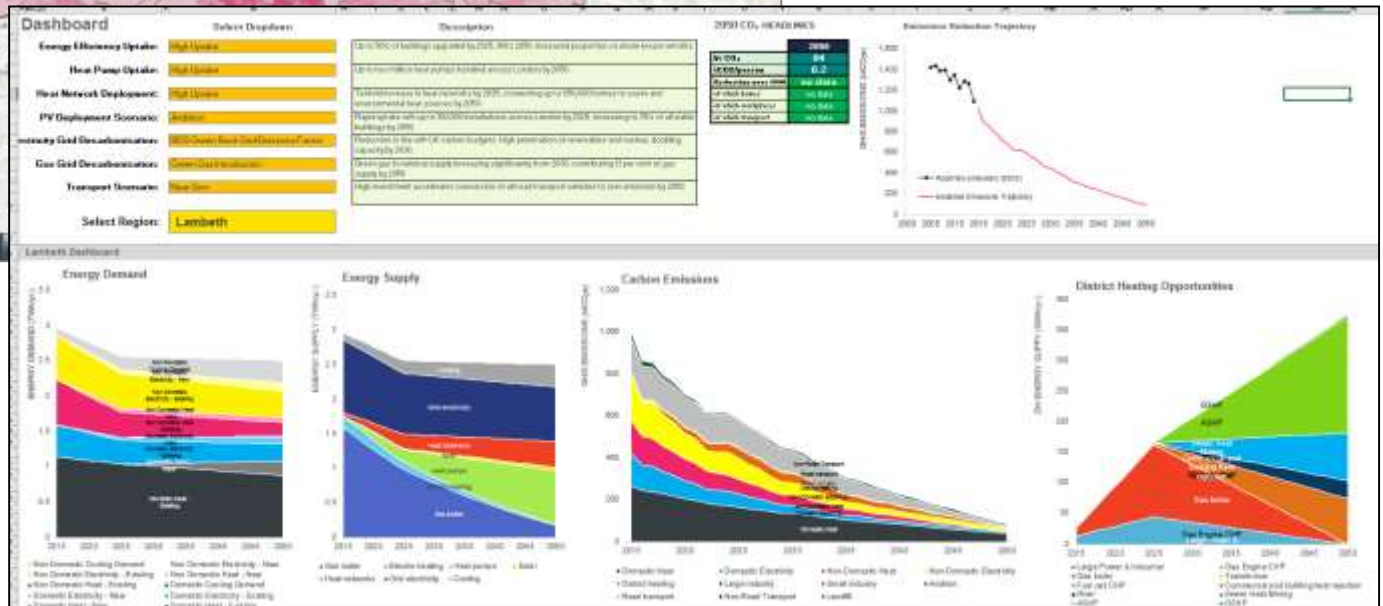
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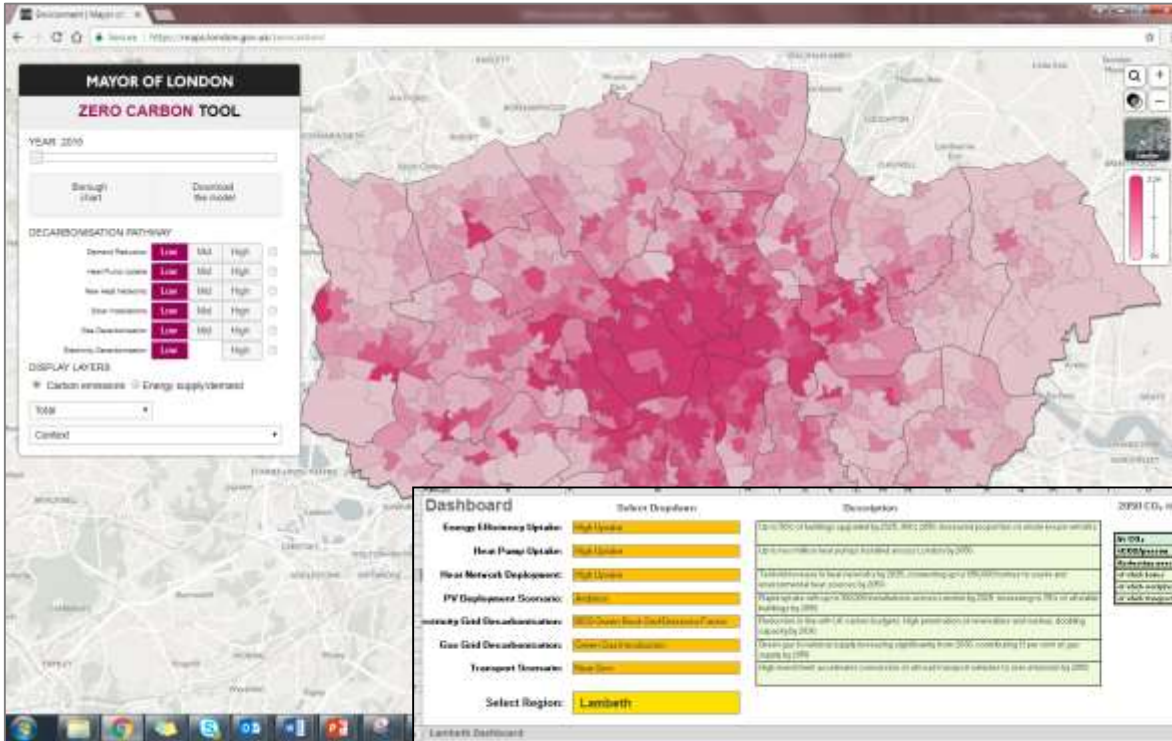
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