VAISALA

Case Study

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A new road to efficiency:

How Edinburgh moved past “one forecast fits all” and saved 22% in costs

Like many city governments, Edinburgh used a “one forecast fits all” approach to de-icing during winter conditions. If freezing was expected, city teams laboriously salted all 650km of the city’s priority road network.

The challenge: Gain efficiency, maintain service levels

These full-city “pre-grits” usually require a great deal of labor, cause “knock on” operational disruption, and eat away at the budget. In a national context of austerity, city leadership knew they needed to increase efficiency, become more resource-conscious, and relieve the budget — all while delivering the same level of safety and service to the public.

The solution: Working smarter, not harder

The project began with thermal mapping of the entire Edinburgh area over the winter of 2017-18, which identified the most important variations in elevation, road temperature, and typical salting needs. Vaisala enabled Edinburgh’s winter weather team to make decisions based on data and science, and the city's team made several key changes:

- The city is now broken into three domains, each of which receives a separate weather forecast of road conditions, validated in real-time by a Vaisala weather station installed in each domain.
- Three separate treatment decisions are made each night during the winter. Sometimes treatment is applied to all domains; sometimes it is only necessary in one or two.

The client:

City of Edinburgh, Scotland

Industry:

Local government
Roads and maintenance

Vaisala provided:

Consulting services
Vaisala weather stations

Along the way, city managers optimized their internal processes. For example, they redrew some routing maps to eliminate inefficient overlaps between the new domains.

The benefits: Financial gain, broader stewardship

Today, the city no longer salts roads that don't need it. By using 3-domain forecasting, winter weather decision managers now only treat the roads that need treating — saving time, labor, and costs related to vehicle use, salting products, and staffing.

The results are compelling. In the first year of use, Edinburgh did a pre-grit on 39 occasions, many of which required only partial coverage on the road network. Compared to the old all-or-nothing approach, this saved the city 22% in costs, not to mention environmental savings from reduced truck mileage and salt use.

The financial savings from the first winter of use have already paid for the thermal mapping exercise.

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This new approach isn't just about saving taxpayer money, though this is an obvious benefit. Less salt strewn across roadways means less runoff and contamination of waterways, as well as less wear and tear on vehicles; these environmental impacts are very important to Edinburgh and the wider community. The efficient use of available resources also allows Edinburgh to maintain its level of winter weather service rather than having to make cuts.

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