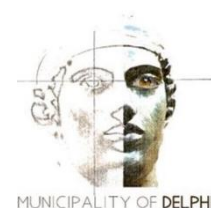


SMART solutions for HYdrogen potential AWAReeness Enhancing

NEWSLETTER 4. OCTOBER 2021

SMART-HY-AWARE aims to promote hydrogen-electric mobility by tackling the main infrastructural, technological (range anxiety related) and market uptake barriers, through the improvement of Policy Instruments linked to Structural Funds in Europe, addressing the **transition to a low carbon economy**. Specific sub-objectives of the project are:

- Exploiting the potential of hydrogen technologies for electro-mobility, involving the whole supply chain;
- Improving regional and local strategies which focus on the real needs for implementation, such as promoting the integration of new models of fuel cells;
- Increasing the efficiency of green propulsion in transport;
- Improving renewable energy grids to cut down electrolysis costs, and IT management applications to enable advanced planning of short-to-mid-term power productions, thus fostering the use of hydrogen power within distributed networks;
- Increasing the deployment and the accessibility to refuelling infrastructure for both public and private sector in urban and rural areas;
- Supporting the deployment of alternative fuel vehicles in public transport by setting up regional financial support schemes;
- Promoting and assessing new measures favouring public-private partnership (PPP) in e-mobility sector;
- Enhancing the capability of public Authorities in developing effective policies for reducing the carbon footprint of transport activities.





SMART HY AWARE DURING THE COVID-19 CRISIS

The fourth semester of Smart Hy Aware has been again highly impacted by the COVID-19 crisis. Travelling was still not allowed, so learning activities were carried out online. Particularly, monthly progress meetings were held, the third Steering Committee took place on the 8th of July, and two virtual site visits were organized by South Holland and Aberdeen partners. The consortium expect to visit both places when possible, but due to its achievements in the implementation of hydrogen vehicles, these virtual site visits allow us to start learning from their experience.

Apart from the site visits, some relevant documents have been produced during this semester and are available on our website. Concretely, Aberdeen City Council has shared their regional [fleet review](#), which objective is to measure the potential hydrogen demand in twelve fleets, and an educational [booklet](#) about hydrogen technologies uses in Aberdeen. In this edition of our newsletter you can find some information of our main learning activities.

IRSV4.1 – PROVINCE OF SOUTH HOLLAND

The first IRSV4 was virtually organized by the Province of South Holland on the 14th of June. It was a great success with more than 50 attendees.

The meeting started showing how the Province gave its first step regarding hydrogen mobility. They deployed their first hydrogen buses thanks to its participation in other European project (3Emotion).



After that, they showed us their deep analysis about possible strategies for joint-procurement of hydrogen buses. In general, joint procurement strategies would enable costs reduction and market and innovation stimulation, without losing the potential for standardization. However, their implementation is very difficult and demanding. Although in the end they did not adopt a joint procurement strategy, they explained the complete study they carried out and the key lessons learnt. Finally, they summarized their experience about how to success in the tendering of HRS: market consultation, functional request and competitive dialogue.



IRSV4.2 – ABERDEEN CITY COUNCIL

The second IRSV4 was organized by Aberdeen City Council on the 16th of June, with the virtual presence of a number of stakeholders.

During the first part of the meeting, Aberdeen's regional hydrogen strategy was presented. It was published in 2015 and outlines key actions required to ensure Aberdeen is a world class energy hub leading a low carbon economy and is at the forefront of hydrogen technology. The vision is to encourage hydrogen usage in a range of different areas to develop a world leading hydrogen economy in the region. The Strategy aims to position Aberdeen as a centre of excellence for hydrogen technology by utilising the transferable oil and gas expertise and the exceptional capacity for renewable energy generation in North-East Scotland. The Strategy has seven key objectives: Vehicle deployment, renewable hydrogen, refuelling infrastructure, non-transport applications, supply chain / market development, communication and education, policy and regulation.

As part of the Smart Hy Aware project, work is underway to refresh the Aberdeen Hydrogen Strategy. Aberdeen City Council is involved in the Aberdeen Hydrogen Hub working group and has established the North East Hydrogen Regional Ambition Steering Committee. Their involvement in these groups together with knowledge and experience exchanges from Smart Hy Aware partners will allow them to update the existing Strategy.



After that, they showed the partnership their achievements regarding hydrogen mobility implementation. Aberdeen has 58 hydrogen vehicles including cars, buses, road sweepers and waste trucks. Over the lifetime of the Aberdeen's hydrogen journey, the City has had over 70 hydrogen vehicles. Some of them have been rehomed for training, demonstration and exhibition purposes.

ACC is aware that to make hydrogen commercially viable, a high demand is needed. A [fleet review](#) was undertaken in collaboration with other entities to establish the hydrogen demand in the region. The review covered approximately 4,000 vehicles. The conclusions were that 89% of the collective fleet is Zero Emissions Vehicle compatible, and of this 89%, 32% can be Fuel Cell. The regional annual hydrogen demand for these 32% of vehicles would be 745 tonnes. The study highlighted that most of the hydrogen-compatible vehicles were heavy-duty. The study also looked at optimal locations where refuelling could take place in the region.

The Council is currently looking at ways to increase demand in order to reduce the cost of hydrogen at the pump, and develop a commercial supply to achieve cost parity with diesel. This project is known as the Aberdeen Hydrogen Hub and it is split into three phases: hydrogen for road transport; hydrogen for rail and maritime uses; hydrogen for heat and industry.

The Aberdeen City region has attracted UK and Scottish Government funding for projects as part of the move towards energy transition.



REGIONAL STAKEHOLDER WORKSHOPS

ARAGON

On June 17th the fourth Regional Stakeholder Workshop took place in a physical way for the second time since the beginning of the project. 15 stakeholders representing a number of public and private institutions (technological centers, local governments, clusters, companies...) from the region attended the meeting.

During the first part of the meeting, the Aragon Hydrogen Foundation presented the mobility aspects of the new edition of the Hydrogen Masterplan, which is the regional document that covers the guidelines on hydrogen technologies and its uses. This document was presented in June 2021.



After that, the LP presented ACC's experience regarding hydrogen technologies: its Hydrogen Strategy, the Hydrogen Hub project, and their fleet review study, in which potential hydrogen demand is analysed for its use in 12 public and private fleets. This is an example of the positive impact that collaborative work among regional stakeholders could have.

During the last part of the meeting some of the regional stakeholders from private industries explained us their vision and needs regarding hydrogen potential. Some key stakeholders who belong to the automotive industry stated the need to establish a concrete strategy towards hydrogen implementation. To this end, public-private collaboration is essential. The automotive industry needs to jointly analyse which changes need to be implemented (components, process, services, staff training, possible suppliers...) to facilitate the transition to a more sustainable mobility in which hydrogen technologies could play an important role. They also suggested the possibility of using interchangeable hydrogen tanks instead of HRS, especially in remote areas such as mountains or rural zones, or for special fleets (motorbikes, industrial machinery such as fork-lift trucks, etc.)

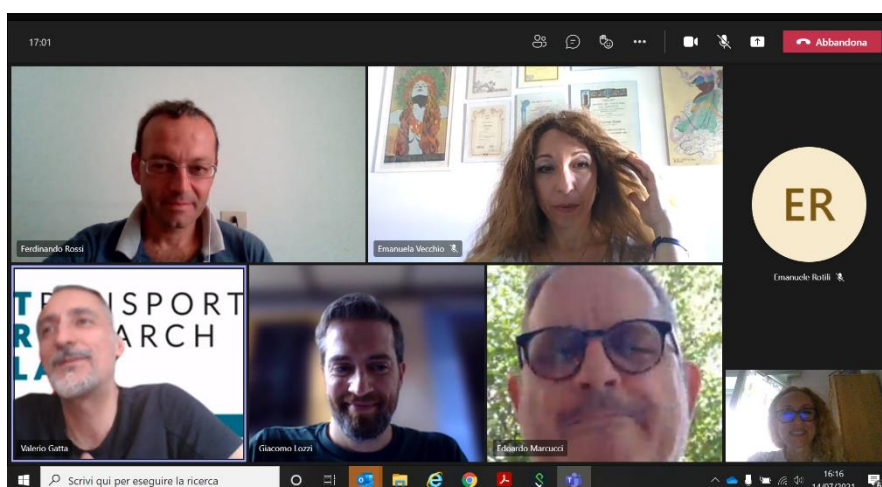
All these ideas are adapted to the reality of the region, since the automotive industry is one of the most powerful in Aragon, and we have plenty of rural zones outside the three main cities, apart from the Pyrenees Mountains in the north of the regions.



LAZIO REGION

This semester, Lazio Region continue involving their regional stakeholders through virtual meetings. They organized one on the 14th of July with 7 participants.

Apart from that, their stakeholders were actively involved in the international workshops and site visits organized by the Province of South Holland and Aberdeen City Council.



Most noteworthy are their achievements towards a regional policy change, also thanks to the contribution of Smart Hy Aware. They have updated two Policy Instruments of Lazio Region: the Regional Mobility Plan and the Regional Energy Plan. Specifically, the Mobility Pplan was integrated with a new document entitled 'The Port Authority System'. This document propose a green hydrogen project for decarbonising maritime and land transport as well as production activities.

This is the main result of exchanges among Smart Hy Aware partners and also of collaborative work at a regional level. Thanks to Smart Hy Aware, there has been an important increase in awareness and knowledge on issues relating to hydrogen mobility. During the project, in order to carry on the work, many issues were explored by all members of the stakeholders working group. This has necessarily led to the awareness of having to analyze the two main regional planning tools involving hydrogen: the Mobility Plan and the Energy Plan.

Members of the regional working group analyzed these documents and realized that, in both documents, hydrogen was almost not considered, so they understood the need to intervene in this regard. The internal components of the working group initiated a series of formal and informal meetings with resources within the administration itself (both technicians and policy makers), in order to highlight the importance of hydrogen both from an energy, environmental and economic point of view.

Thanks to the exchange of experiences with the partners, many interesting interventions on hydrogen mobility in other European regions were learnt. As a result, they succeed in making policy makers understand that in Lazio Region there was still a long way to go towards decarbonization of mobility. They assumed that the only way to reach the goals of truly sustainable and clean mobility is to act on long-term planning in a way to be able to have the investments and resources that are necessary for the construction of the associated infrastructures to make, distribute and use green hydrogen.

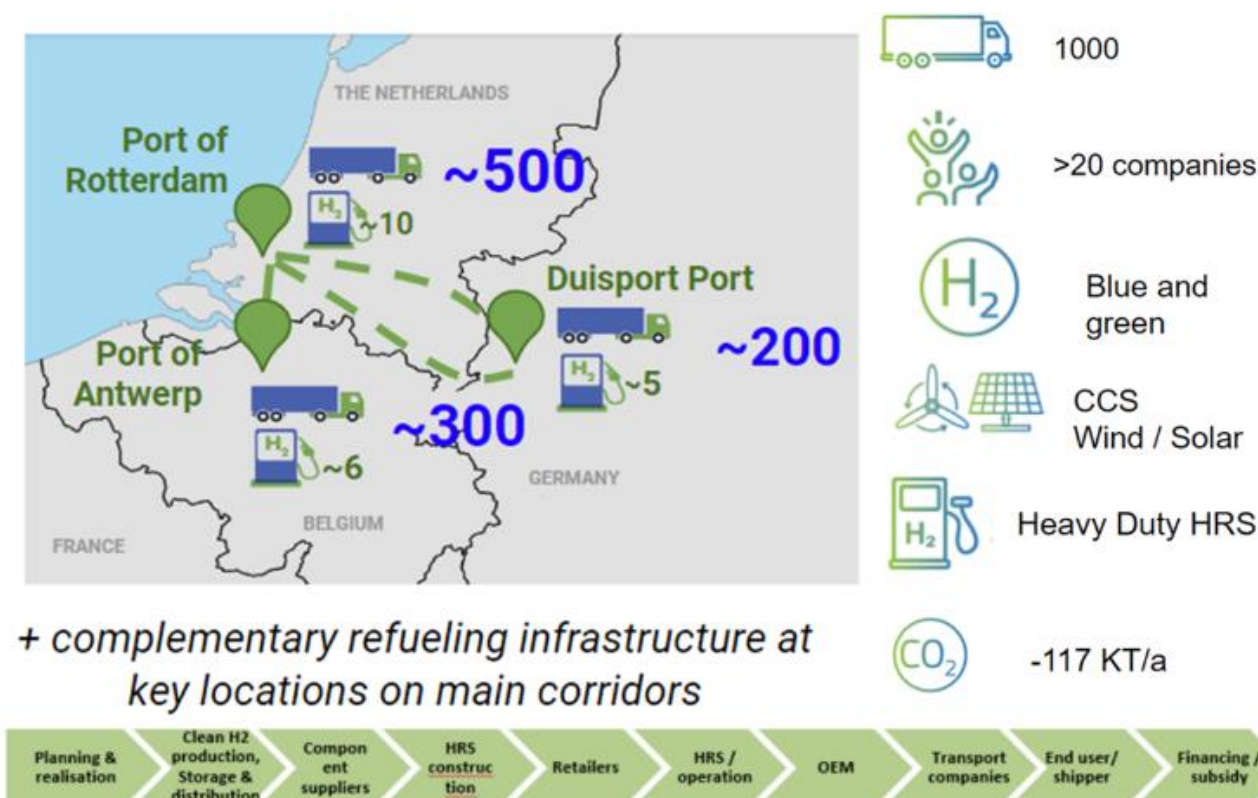
Currently, Lazio Region intends to promote the production of green hydrogen by creating opportunities to encourage the birth of new businesses and the development of new production activities in a rapidly growing sector, with a high level of technological innovation.



PROVINCE OF SOUTH HOLLAND

During the previous semester, there was a change of the context and objectives of Smart Hy Aware within the Province of South Holland. With the harbour of Rotterdam as strategic hub in the region that connects logistics with Antwerp and the German Ruhr area, there is a big challenge to reduce emissions of greenhouse gases by the logistics sector. Hydrogen can and must play a significant role in decarbonizing the logistics sector since alternative zero emission solution (batteries) are inadequate for their application in heavy-duty transportation.

The province of Zuid-Holland has sought contact with HyTrucks, a consortium that aims at planning and implementing 1000 hydrogen trucks in the triangle between the Port of Rotterdam (the Netherlands) the Port of Antwerpen (Belgium) and the Ruhrgebiet (Germany).



The first online meeting took place on Tuesday the 30th of March 2021. Representatives of Air Liquide, the Port of Rotterdam, Holthausen, the province of Zuid-Holland and the Rebel Group were present (8 attendees). Participants exchanged information about their own organisation and their ambitions and also about the objects of both HyTrucks and SMART HY AWARE. The first meeting was followed by a second online meeting on Tuesday the 1st of June 2021. Participants discussed ways in which they could work together. The suggestions were: communication topics (such as joint webinars); search for ambassadors within the port; aid in the search for strategic HRS locations; investigate options for the role of the province as a road authority; policy development for H₂ trucks around ports, among others.

On Friday the 16th of July these suggestions were also discussed with the director of the department of mobility & environment, Irma Kenter. The director asked to investigate the possibility of working together with other programs and projects within the province in order to create win – win situations. Some projects were selected and will be interviewed in the coming semester.



MUNICIPALITY OF DELPHI

The Municipality of Delphi organized in July 30th the fourth virtual Regional Stakeholder Workshop, which was celebrated with 12 attendees, including representatives of the regional Government of Central Greece and the Municipality of Delphi, the Hellenic Institute of Transport, the local Chamber of Commerce and Industry, regional Technical Chamber, and also other cooperatives. The meeting included the presentation of the first deliverable from the subcontractor CERTH, and the discussion with all the stakeholders about the study and all the activities took place during the reporting period.



In the framework of Smart Hy Aware, Municipality of Delphi will evaluate the use of hydrogen in the public fleet and for tourism purposes. The regional action plan will include the steps that need to be carried out to implement the use of hydrogen, and how it could be produced from biomass, thus creating a circular economy.

The subcontractor (CERTH), who supports the Municipality of Delphi in the project, completed the 1st Deliverable: Support in the preparation of a study for the production of hydrogen from energy produced from biomass or other renewable sources. Evaluation of the area potential. It includes mapping of the area's energy potential to biomass or other Renewable Energy Sources (RES).

The research investigated the biomass potential that can be collected in this particular area, deriving both from the agricultural and forestry sectors. The total agricultural biomass potential from all the cultivated arable crops was estimated by using two different tools that have been developed by CERTH. The results showed that olive tree prunings, were the most important source of biomass in the wider area of Amfissa's olive grove (total 19,588 tons of dry biomass potential for the Fokis regional unit which includes 10,075 tons from Amfissa's municipality). A theoretical model also concluded that the area has high potential from forestry biomass and specifically coniferous and other leafy trees (15,330 tons of dry mass/year). Furthermore, studies based on software and statistical data showed that the Fokis regional unit area could have high capacity for energy production, especially from wind farms (up to 848 GWh on an annual basis). Existing wind farms, small hydros and PV systems installed in mid 2010s also contribute to energy produced from renewable sources.

The meeting showed that the public and governance stakeholders have appreciated the significance and potential impact to the environmental and economy that the study and its results could have to the region of Amfissa.

In general, stakeholders appreciate the significance and potential impact to the environment and economy that Smart Hy Aware and its results could provide to the region. Municipality of Delphi intends to influence local and regional policies to introduce hydrogen mobility in the next Smart Specialization Strategy for Greece, to fund actions and infrastructure related to hydrogen and its use in transport as an energy carrier.

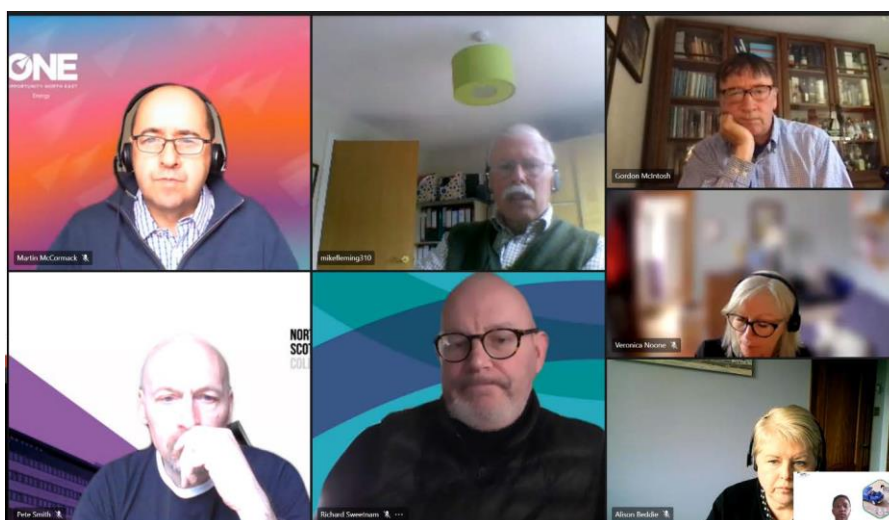


ABERDEEN CITY COUNCIL

ACC has enthusiastically continued to implement various actions as part of the Smart Hy Aware programme and have accomplished several activities this reporting period.

With the ongoing Covid-19 pandemic, ACC have become adept in hosting virtual stakeholder meetings. In this reporting period ACC hosted several Fleet Review update meetings in February and March 2021 with Cenex and Opportunity North East ((ONE – responsible for developing Aberdeen City Region economic activities after the oil and gas industry downturn) to finalise the Fleet Review (Hydrogen Demand) Study. Following the completion of the Fleet Review in March 2021, the report was published on the ACC H2 Aberdeen and Smart Hy Aware webpages.

Following the publication of the Fleet Review report, ACC has continued engagement with 5 neighbouring local authorities (ACC, Aberdeenshire Council, Highland Council, Moray Council and Angus Council) on how to work together to purchase hydrogen fuel cell vehicles and retrofit current diesel vehicles. ACC hosted a physical meeting with these local authorities on 14 July 2021 (11 attendees).



The aim of the meeting was for the local authorities to discuss hydrogen technology, have a tour of the Aberdeen City Hydrogen Energy Storage (ACHES) hydrogen refuelling station and see hydrogen fuel cell vehicles and dual-fuel vehicles in operation.

In this reporting period, ACC helped to establish the North East Hydrogen Ambition Steering Committee. ACC plays a key role in co-ordinating and facilitating this working group whose aim is to bring together a coalition of stakeholders in North East Scotland who are actively trying to establish a hydrogen economy in the region. The Steering Committee has an independent chair, and its members include senior individuals from ACC, Energy Transition Zone Ltd, Storegga, Hydrasun, Aberdeen Renewable Energy Group, Net Zero Technology Centre, North East Scotland College and Scottish Enterprise (Scotland's national economic development agency).

In this semester the Steering Committee had 2 meetings on 25 May and 30 June 2021. The aims of these meetings were to create a Hydrogen Ambition Narrative for the region and provide updates on current and upcoming hydrogen projects. The Steering Committee will contribute toward the update of ACC's Hydrogen Strategy and will also work to raise demand for hydrogen in the region. Following the completion of the Hydrogen Ambition Narrative, parts of the document such as the region's hydrogen demand and skills development will be incorporated as part of ACC's Hydrogen Strategy.

ACC was invited to present in some conferences during this semester. On the 21st of February, they attended the North East Scotland Transport Regional Partnership's Freight Forum and gave a presentation on the Hydrogen Strategy and the North East Scotland Fleet Review. They also gave a presentation at two webinars: Climate Week North East (17th March) and the Knowledge Transfer Network: Making the Right Technology Decision for Decarbonising Fleet for Local/Regional Authorities (15th July). Both presentations showcased Aberdeen's journey towards a hydrogen energy transition and the vast possibilities of hydrogen uses.



PANNON BUSINESS NETWORK

In Semester 4, PBN was active in the learning of experience process, organising and participating in numerous workshops to widen their experience in connection with hydrogen.

PBN organised their 4th RSW on 9th July, to inform regional stakeholders about the good practices of ACC and PSH, based on the information they shared with the partnership in their online IRSWs held in June. In the framework of the workshop, they discussed how the advanced good practices of the Dutch and Scottish Partners might be utilised in their region in order to promote and enhance the spread of hydrogen for mobility. Regarding the participants, 5 external stakeholders took part in the 4th RSW, including the representative of Szombathely, the representative of the local Chamber of Commerce, university players and business support organisation member.

Apart from that, PBN has been member of the National Hydrogen Technology Platform since its foundation (April 2020). In the framework of the Platform's activities, different working groups have been established, and they are active in two of them: Hydrogen Mobility and R&D&I in Hydrogen. As part of them, they regularly participate in workshops where they can gain new knowledge in the topic, as well as facilitate networking with hydrogen stakeholders from Hungary.



The SZOMBATHELY 2030 policy document -finalised in January 2021- envisages several measures to be taken in the city of Szombathely in the following 10 years, including the implementation of hydrogen in mobility, thanks to PBN's participation in Smart Hy Aware. The policy document was accepted and signed by the Municipality of Szombathely in June 2021. The local policy makers presented the strategic document to the representatives of the national government, who advocates the program and they support to find resources to implement the measures (including the hydrogen related ones) indicated in the document.

With the help of the government, new policies are envisaged to be launched in the next years to promote hydrogen mobility in Hungary and in Vas County. It is worth highlighting the installation of up to 14 HRS by 2030 in Hungary, one of them in Szombathely. Furthermore, the policy document suggests that tourism might be the area in the county where a hydrogen-fuelled mobility project might be implemented as a pilot project. In later steps, hydrogen-fuelled vehicles might appear also in everyday public transport. A [website](#) has been created where the main goals of the strategy are highlighted.

In Semester 4 some discussions were carried out in order to move forward the planned H2 related measures described in the SZOMBATHELY2030 document. In June 2021, it turned out that from January 2022, a new company, called BLAGUSS, will be the new bus provider in Szombathely. In Semester 5, PBN intends to organize a meeting with BLAGUSS and city representatives to promote the use of hydrogen in the new buses, since in the SZOMBATHELY2030 policy document it is planned that H2 shall appear in public transport in the city within 10 years, and one HRS might be installed in Szombathely.



UPCOMING EVENTS

Within the 5th semester we expect to come back to physical site visits after a long time of virtual meetings. Two physical site visits are foreseen: Budapest (hosted by PBN) in November and the Province of South Holland in December.

Regarding Regional Action Plans, regions will develop an initial draft which will contain what each region expect to achieve within the Smart Hy Aware RAP. This way, all the consortium will be aware of what is being done in other regions and what expertise they could gain from others. We will take advantage of physical site visit to work together on the identification and description of Good Practices and on RAPs.

Smart Hy Aware consortium will organize a workshop in the framework of the EU Regions Week 2021. Lazio, South Holland and Aberdeen will be the partners representing Smart Hy Aware. The workshop will be moderated by the region leading the Hydrogen Valleys S3 Platform.

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