



User-Centred  
Energy Systems

# Social License to Automate

## Task Status Report

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## Summary

This Task aims to understand the non-technical obstacles to user engagement with automation technologies in demand side management, and to identify what is required to build and maintain the ‘social license’ – which includes user understanding, acceptance and trust – essential to the success of these technologies.

## Emerging key findings

Among the initial findings from our case study analysis are the following:

- Analysis of users’ motivations to engage in DSM suggests that some users may be more responsive to the grid stability argument than the environment / climate change argument. This is likely due to the fact that the grid stability issue is perceived as more immediate (in space and time), tangible, tractable (i.e. can be addressed through practical action). But just how persuasive the grid stability argument is may also vary according to which device is affected by DSM; e.g. analysis in Switzerland shows that it is more persuasive in relation to EVs than heat pumps, probably because there is some understanding among EV owners that EVs can be both a cause of and solution to grid stress.
- The opportunity to experience participation in an automated DSM program is important. When participants are offered a limited trial period after which they can make a decision to continue to participate, they appear to be more inclined to sign up.
- Participants of a vehicle-to-grid trial in the Netherlands have expressed a strong desire for access to information about the charging status of the car at any time. In other words, they want more than the assurance that it will be charged and available for them when they have indicated they next need it; they want the possibility to monitor the status of the car.

## Objectives for the last six months

The focus of our work in the last 6 months has been case study data collection and analysis in our participating countries. The case studies include:

**Australia:** VPP study with company Solar Analytics; a study of EV drivers’ attitudes to managed charging

**Austria:** direct load control in the Flex+ and Sim4Blocks projects

**Netherlands:** Smart Solar Charging program in Utrecht

**Norway:** managed EV charging in the ECHOES and INVADE projects; pilot ethnographic study of smart home residents

**Sweden:** ethnographic study of households with 2<sup>nd</sup> generation smart meters from distribution network company Ellevio

**Switzerland:** direct load control by distribution system operator Innosuisse; a large user survey

**USA:** *Please note that, due to a change in the US National Export during the course of the Task and Covid-19 related barriers, there has not yet been any case study analysis underway in the USA.*

Access and progress in many of these case studies has been impeded by Covid-19, but we expect to be able to include at least some analysis from each of them in the final reporting of the Task.

### Expert meetings/seminars/conferences held in past six months

Date	Place	# of Experts	Type of Meeting	Government	Industry	Academic
15 October 2020	Online	~120	'All Energy' Australia conference session on VPPs	~30	~50	~40
19 November 2020	Online	~40	Monash Net Zero webinar		~20	~20
1 December 2020	Online	~25	Australian National University Battery Storage and Grid Integration Program seminar			~25
3-4 December 2020	Online	~25	Australian Energy Social Science Workshop		~5	~20
17 March 2021	Online	~15	Australian industry workshop		~10	~5

### Reports produced in the past six months

- Journal article 'Factors influencing consumer acceptance of vehicle-to-grid by electric vehicle drivers in the Netherlands', by Koen van Hueveln, Rishabh Ghotge, Jan Anne Annema, Esther van Bergen, Bert van Wee, Udo Pesch, *published in Travel Behaviour and Society*
- Report on Solar Analytics solar and battery VPP user research, prepared by Mike Roberts, Sophie Adams and Declan Kuch
- Journal article 'Social License to Automate: A Critical Review of Emerging Approaches to Electricity Demand Management', co-authored by Sophie Adams, Declan Kuch, Lisa Diamond, Peter Fröhlich, Ida Marie Henriksen, Cecilia Katzeff,

Marianne Ryghaug, Selin Yilmaz, has received positive reviews from *Energy Research & Social Science* and is undergoing revisions

## Objectives for the next six months

In the next six months we will conclude the case study data collection and analysis and complete the final reporting from the Task.

## Expert meetings/seminars/conferences planned in the next six months

Date	Place	Event
14 April	Online	Users TCP Academy webinar
21-22 April 2021	Online	National Experts' workshop

## Reports planned for the next six months

In this period we will prepare the profile reports for each of the participating countries, as well as the international report. We will also release at least one policy brief, and possibly several on specific topics or forms of automated DSM, such as managed Electric Vehicle charging, airconditioning Direct Load Control, battery Virtual Power Plants, etc. We will aim to publish these outputs in Q3 2021, or by Task conclusion in October 2021 at the latest.

We are exploring the possibility of together organising/editing a journal special issue in which to publish papers based on our work as well as to invite contributions from other researchers; this would be a way to create further visibility for the Task within the academic context. The timeframe for such an initiative is likely to extend somewhat beyond the life of the Task due to the stages and cycles of academic publishing.

## Outreach

We are engaging with industry and government stakeholders in the events listed in the tables of meetings/seminars/conferences held in past/next six months above, as well as in many more informal conversations. We have now conducted workshops with industry participants in two of the participating countries, Switzerland and Australia, which have generated valuable data. We will also plan further industry and government stakeholder-facing workshops as the analysis is completed.

## Ideas for new work

The National Experts are considering possibilities for further collaboration beyond the conclusion of the Task in October. The Task Leaders are working with industry and academic partners through the new Australian Cooperative Research Centre 'RACEfor2030' in areas including residential rooftop solar PV curtailment and electric vehicle/grid issues.

## Finance

This is a task-share Task. Further countries or industry partners may participate and need only ensure that their Experts are adequately supported to travel to attend biannual meetings and to contribute some of their time within their current role to the research collaboration.

The Task is proving a fertile and productive platform for National Experts to collaborate and demonstrate international impact and engagement.

## Activity time schedule

### Structure of activities

The Task consists of 4 stages: the development of a shared concept definition and design of the research; collection of data; analysis of data; and dissemination of findings. Throughout all stages of the Task, bi-annual meetings of the National Experts are held, at which findings of national experts will be presented, and which will support the development of wider knowledge-sharing communities in these countries.

#### Stage 1

1. **Define the scope** of trusted automation
2. **Review the literature in each of the workstreams** to understand existing knowledge and identify gaps in this knowledge.
3. **Formulate research questions** – both the core research questions of the whole Task as well as secondary, more specific research questions within each workstream
4. **Elicit policy makers' and regulators' evidence need** to ensure the outputs of the Task are as useful, as used, and as impactful as possible.
5. **Identify the key factors** on which case-study data is needed within each workstream.
6. **Develop methods and templates for collection and analysis of case study data.** This is to ensure that data from case studies are collected and analysed in an appropriately consistent and rigorous manner within and across member countries and across workstreams.

#### Stage 2

**7. Identify and conduct relevant case studies.** Establish contact and collect data.

### Stage 3

**8. Analyse the case study data**

**9. Identify common and divergent factors across cases**

### Stage 4

**10. Write country profile reports** with findings from case studies within each country

**11. Prepare outputs within each workstream** on key issues and findings relevant for stakeholders

**12. Share outputs** on IEA website, through academic and non-academic publications, at conferences and at other events with relevant stakeholders in government and industry.

## Timeline

	Oct 2019 – Apr 2020	Apr 2020 – Oct 2020	Oct 2020 – Oct 2021
Stage 1			
Stage 2			
Stage 3			
Stage 4			

## Impacts of Covid-19

Access to and data collection within several of the participating countries has been delayed due to Covid-19. We have a more limited number of case studies than might have been possible without the constraints imposed by Covid-19 on our participating National Experts and industry contacts. Even from those case studies that have gone ahead, it is now likely that at least of the results that we had hoped to include in our final Task reporting will not be available in time. We have adapted to these constraints by taking advantage of the possibilities associated with online interviewing, e.g. our Swedish National Expert has developed an innovative virtual home tour and home energy diary method in order to gather insights from householders.

## Matters for the ExCo

Recommend the ExCo to approve the Task Status Report.

With our National Experts we are currently planning the format of the country-specific final reports, and the elements suggested so far include:

- Background info on the context of automated DSM in each country, including comparable data items such as smart meter penetration
- Close analysis of the case studies conducted in each country



- A measurement of readiness for automated DSM (probably more qualitative than quantitative) in each country

Any feedback or further suggestions from the ExCo for our consideration would be appreciated.

## Participating Countries

Australia, the Netherlands, Switzerland, Austria, Sweden, Norway, USA