



# PowerMatching City II

## Smart Grid Pilot Projects — Results as of September 2015

Innovation programme commissioned by the ministry of Economic Affairs

- Local electricity grid on DC voltage
- Electric transport and decentralised electricity generation
- Energy-neutral Heijplaat
- Modular smart grid for business parks
- Smart grid and energy transition in Zeewolde
- ProSECco examines four user groups
- Smart grid in sustainable Lochem
- Smart heat grid on TU Delft campus
- Your Energy Moment
- Couperus Smart Grid
- Cloud Power Texel
- **PowerMatching City II**

### Goal

- PowerMatching City II (follow up of PowerMatching City I) aims to implement a total package of smart energy services on a larger scale.

### Issues

- How can we align smart grids to the processes of the energy providers?
- How can we align energy services to the demands and requirements of the users?
- How do we achieve optimum capacity management in a smart grid?
- How can we validate the business cases that were proved feasible in PowerMatching City I?

### Duration

- January 2012 through January 2015.

### Project partners

- DNV GL, ICT Automatisering, TNO, Essent, Enexis, Gasunie, Technical University Eindhoven, Technical University Delft, Hanze University of Applied Sciences.

In 2009 the village of Hoogkerk in the province of Groningen started the world's first smart grid pilot project: PowerMatching City I. The project incorporated 22 households, (micro) CHP units (combined heat and power), hybrid heat pumps, solar PV panels, smart devices and two electric vehicles. This successful project was followed up with PowerMatching City II, including an additional 40 households. In PowerMatching City II, Hoogkerk and the Thomsonstraat in the city of Groningen gained practical experience with new energy services and the feed in of renewable energy to the grid.

### Results

PowerMatching City (PMC) demonstrated that smart management of energy supply and demand is technically feasible and generates value for all stakeholders. "Flexibility has economic value," explains Albert van den Noort, project manager with DNV GL. "The benefits of flexibility for the Dutch consumer market could amount to as much as € 3.5 billion. If grid operators can count on flexible consumer devices they will need to invest less in the energy grid. Moreover, the losses due to long distance energy transmission will decrease as well. Flexibility means energy providers can more efficiently manage their customers' energy demand and so they can purchase energy on the market place at more competitive rates. The energy providers can also use the locally generated energy to align supply and demand at the local level and so reduce costs even more."

>> *Sustainable. Agricultural.  
Innovative. International.*



The project also produced physical innovations, such as electric scooters that are intelligently charged with renewable energy. “The scooters have a built-in PowerMatcher that was especially developed for the pilot project,” explains Van den Noort. “All the necessary technology has been installed on a chip, which means that in principle any device can participate in a smart energy system.”

### Lessons

Two energy services have been developed together with the residents in order to make the most of the flexibility. “Energy services must be simple and transparent. They can only be successful if they can meet the needs of the residents,” says Van den Noort. The energy services enable the residents to use energy cooperatively in either the most cost-effective or the most sustainable manner. The pilot project revealed that information about costs was a stronger trigger than information about sustainability. On average, residents who could view information about the costs on the energy monitor in their living room checked their monitor twice as often as the households who received information about sustainability. PMC also tested various forms of demand response. The residents preferred the system whereby the equipment automatically turned itself on and off. “This system required the least effort, but it does mean that the users have to have confidence in the functioning of the devices,” says Van den Noort. Van den Noort believes that a new market model is needed. “We need a market party that can manage the flexibility and

distribute it to the best effect. The system also needs to be standardised to facilitate economically feasible and large-scale roll-out in the consumer market. This will reduce the costs of installing smart devices and running energy services.”

### Plans for the future

Van den Noort is proud of the results of the pilot project. “PMC is a good example of how you can integrate a mix of devices. Various combinations of devices and energy carriers are possible.” The now completed second phase does not mean the end of the pilot project. “Some of our ‘living labs’ will be continued. The equipment is all in place and, not unimportantly, the participants are really enthusiastic. We also want to scale up our energy services and bring them to market via large-scale demonstration projects. That is currently our biggest challenge. I hope that we will soon be testing in thousands of households, not only in the Netherlands, but abroad too, because our project also has international ambitions.”

### More information

Would you like to find out more about the PowerMatching City II project? Visit [www.powermatchingcity.nl](http://www.powermatchingcity.nl) or contact Albert van den Noort of DNV GL at [albert.vandenoort@dnvgl.com](mailto:albert.vandenoort@dnvgl.com) or call +31 (0) 50 700 97 84.

### Smart Grid Pilot Projects: energy innovations

The goal of the Smart Grid Innovation Programme (Innovatieprogramma Intelligente Netten – IPIN) is to accelerate the introduction of smart grids in the Netherlands. The Netherlands Enterprise Agency (RVO.nl) carried out the project for the ministry of Economic Affairs. Over the past years, twelve different pilot projects have gained learning experiences with new technologies, partnerships and methods. The pilot phase has now been completed, but most of the projects will be continued. Via RVO.nl they share their experiences, particularly concerning the five key themes involved in smart grids: legislation and regulations, user research and user engagement, vision, standardisation and new products and services. The goal is to achieve widespread roll-out via the path of experimentation.

More information: [www.rvo.nl/intelligentenetten](http://www.rvo.nl/intelligentenetten)

#### This is a publication of:

Netherlands Enterprise Agency  
Croeselaan 15 | 3521 BJ Utrecht  
PO Box 8242 | 3503 RE Utrecht  
T +31 (0) 88 042 42 42  
F +31 (0) 88 602 90 23  
E [ipin@rvo.nl](mailto:ipin@rvo.nl)

[www.rvo.nl/intelligentenetten](http://www.rvo.nl/intelligentenetten)

This publication was commissioned by the ministry of Economic Affairs.

© Netherlands Enterprise Agency | September 2015

Publication number: RVO-092-1501/FS-DUZA

NL Enterprise Agency is a department of the Dutch ministry of Economic Affairs that implements government policy for agricultural, sustainability, innovation, and international business and cooperation. NL Enterprise Agency is the contact point for businesses, educational institutions and government bodies for information and advice, financing, networking and regulatory matters.

Netherlands Enterprise Agency is part of the ministry of Economic Affairs.