

A romantic couple is dancing on a rooftop at sunset. The man is wearing a dark jacket over a light blue shirt, and the woman is wearing a white sweater and a denim jacket. They are both smiling and looking at each other. In the background, a construction worker in an orange shirt and hard hat is working on the rooftop. String lights are hanging across the scene.

**VON WIENERGIEBÜNDELN
FÜR WIENERGIEBÜNDEL:**

Innovative PV-Solutions in Urban Energy Supply

Klemens Neubauer, Feb.2016

AGENDA



- PV in Austria and Vienna
- Key characteristics of the crowdfunding model WIEN ENERGIE
- Importance and the benefits of the business Model – Crowdfunding
- Success factors and challenges and project finance

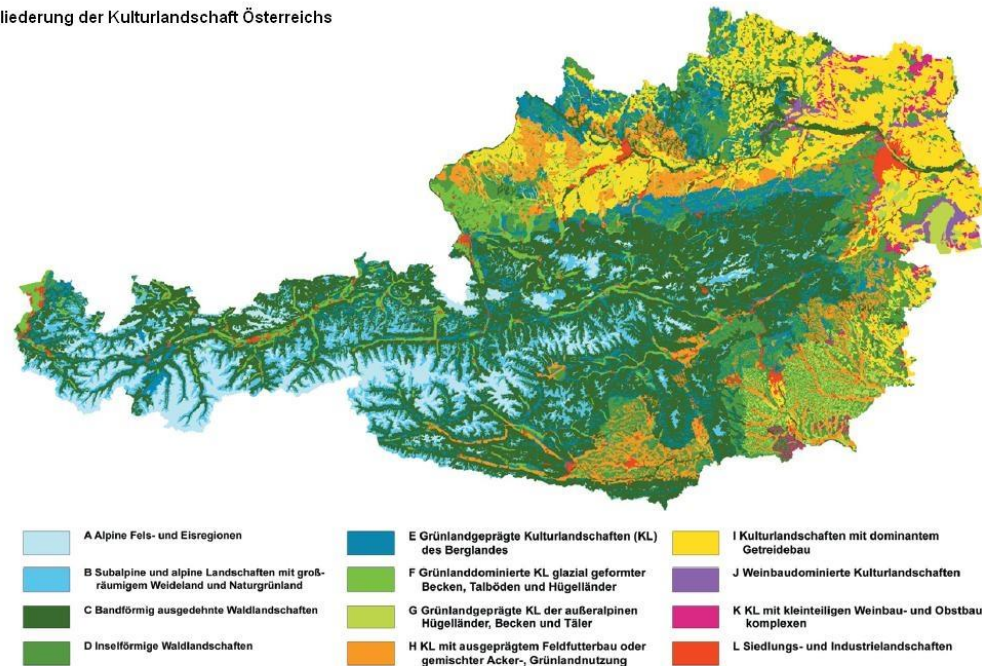
PV in Austria and Vienna



Landscape, Population, History

- Cultural Landscape: 60 % alps
- Population structure: 64 % live in urban areas (2010)
- Hydroelectric power station (60 % of domestic power generation; app 13,2 GW in operation, production 38 TWh)

Gliederung der Kulturlandschaft Österreichs

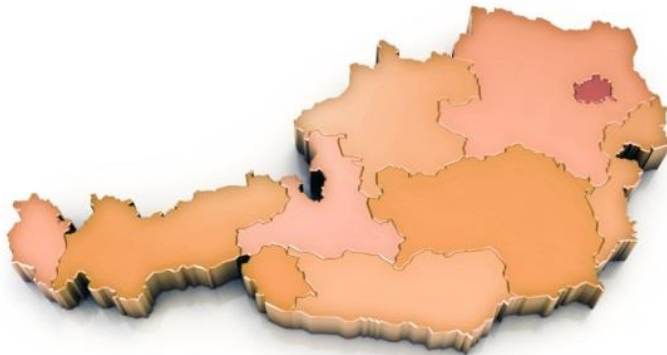


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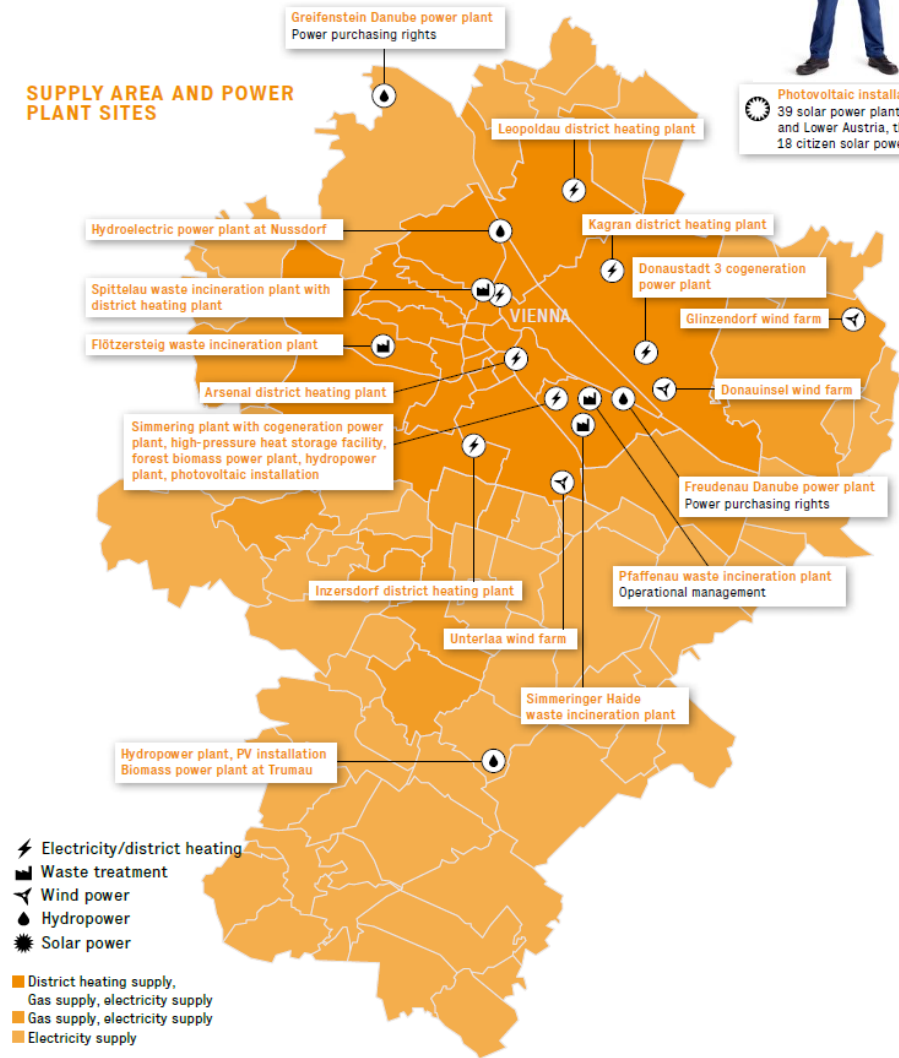
PV in Austria and Vienna

WIEN ENERGIE – Supply Area

- Customers: 1,4 million electricity and around 669.000 gas customers



SUPPLY AREA AND POWER PLANT SITES



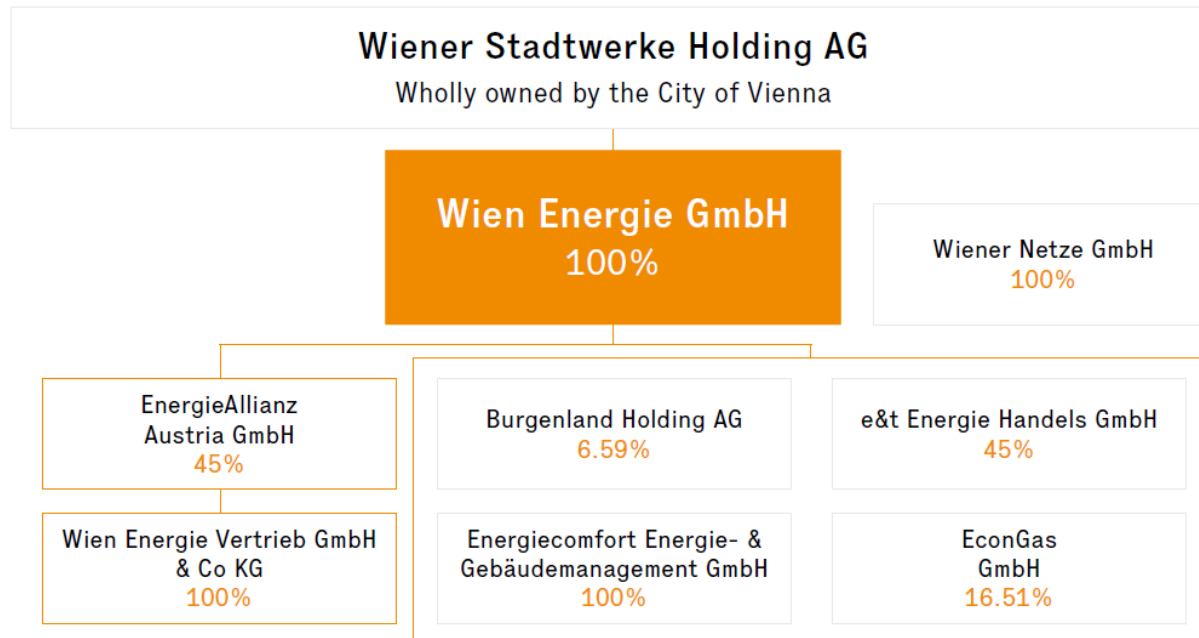
Photovoltaic installations
39 solar power plants in Vienna and Lower Austria, thereof 18 citizen solar power plants

PV in Austria and Vienna



WIEN ENERGIE – company organisation

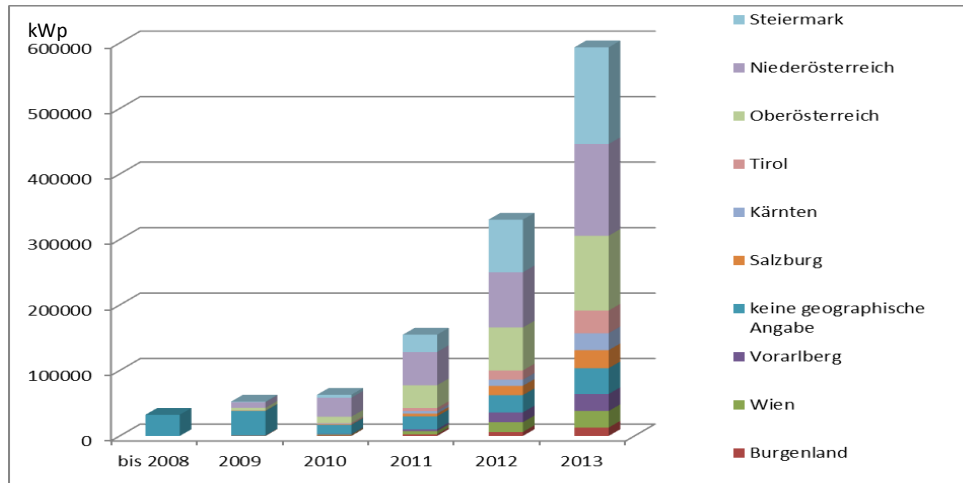
- Sales in 2014 : 9.349,4 GWh electricity (20,5% of which from renewable energy sources)
- Employees: average of 2,730
- Turnover: around EUR 1,794 million in the 2014 financial year
- Strategy: 30% renewable until 2030



PV in Austria and Vienna



PV-Facts in Austria

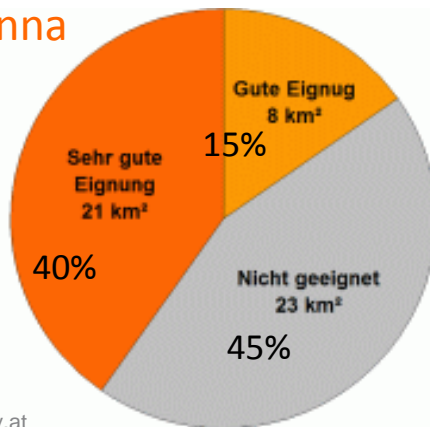


Source: Statistik Austria, PV Austria

For 2015 we expect to have reached 1 GWp

- **1%** of austrian electricity demand provided by PV
- PV Potential Austria: **71 TWh/a** (electricity demand 69 TWh/a)
- It needs an area of app. **710 km² (*)** (< 2 x Area Vienna) to supply Austria with electricity of PV => less than **1%** of total area Austria (app. 84.000 km²)

... in Vienna



Source: wien.gv.at

- **0,4%** of viennese electricity demand provided by PV
- PV Potential Vienna: **3 TWh/a** (app. 33% of electricity demand 9 TWh/a)
- It needs an area of app. **80 km² (*)** to supply Vienna with electricity of PV => 20% of total area Vienna (app. 414 km²)
- PV Potential Vienna on roofs: **app. 29 km²**

(*) bezogen auf 1000 Volllaststunden

PV in Austria and Vienna

Experiences

- Wien Energie plans, builds, finances and operates solar power plants
- More than 55 solar projects with more than 13 MWp
- For 4.800 tons of CO2 reduction per year
- Energy for around 5.200 households
- Businessmodels for various customersegments
- Wien Energie takes the technical and economical risks => „completepackage“



BSKW Bahnhof
Wien Mitte



BSKW Hietzing



Gutscheinmodell Spar



BSKW Leopoldau



PV in Austria and Vienna



Rent/Hire-purchase

1 Solarkraft EinfachNutzen Fix oder Float

Customer rents PV of Wien Energie, installed on his roof and uses electricity local.

2 Solarkraft Freiraum

Partner rents suitable area to Wien Energie.

3 Solarkraft Klima (+)

Customer rents PV of Wien Energie, installed on his roof and uses electricity local. Control-Signaloutput for control of cooling system.

4 Solarkraft Einfach Gießen (simply pour)

Hire-purchase for mobile PV on tractor trailer for irrigation of fields.



PV Combi-produkts

5 Grüne Wärme Erdwärme (geothermal energy)

Combination of PV and heat pump to optimize energy usage in building.



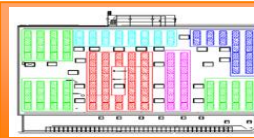
PV Crowdfunding

6 BürgerInnenbeteiligung Sale & Lease Back

Citizen's can buy single PV-panels of solar power plants. Wien Energie leases back the panels and pays a rent/interest to customer.

7 BürgerInnenbeteiligung Gutscheinmodell

Citizen's can buy single vouchers so that they support the roll-out of PV. Customers get each year vouchers for the next 25 years with an additional interest on top.



PV Service Offers

8 Solarkraft Planungstool (PV Baukasten)

Wien Energie offers Tools for simply planning PV plants on new buildings free of charge.

9 Solarkraft PV Startklar (read for take off)

Wien Energie offers certification for existing and new bulidings in view of PV-suitability.

Key characteristics of the crowdfunding model



Viennese citizens are highly interested in renewable energy sources and want to contribute actively.

Municipality of Vienna is committed to energy generation from renewable sources => part of the city government program. Photovoltaics is an important option in urban areas to follow this path. So the idea of a Citizens' Power Plant was born.



The majority of citizens in Vienna lives in flats. There are many hurdles and burdens for tenants/flat owners to take part in renewable energy story.

Problems:

- Complex ownership structures
- Downscaling investment options
- Conservation of ancient houses
- Approval Procedures
- No technical expertise
- ...

The participation model of Wien Energie overcomes these hurdles and provides a simple, profitable and secure option for interested people to participate in solar development.

Key characteristics of the crowdfunding model

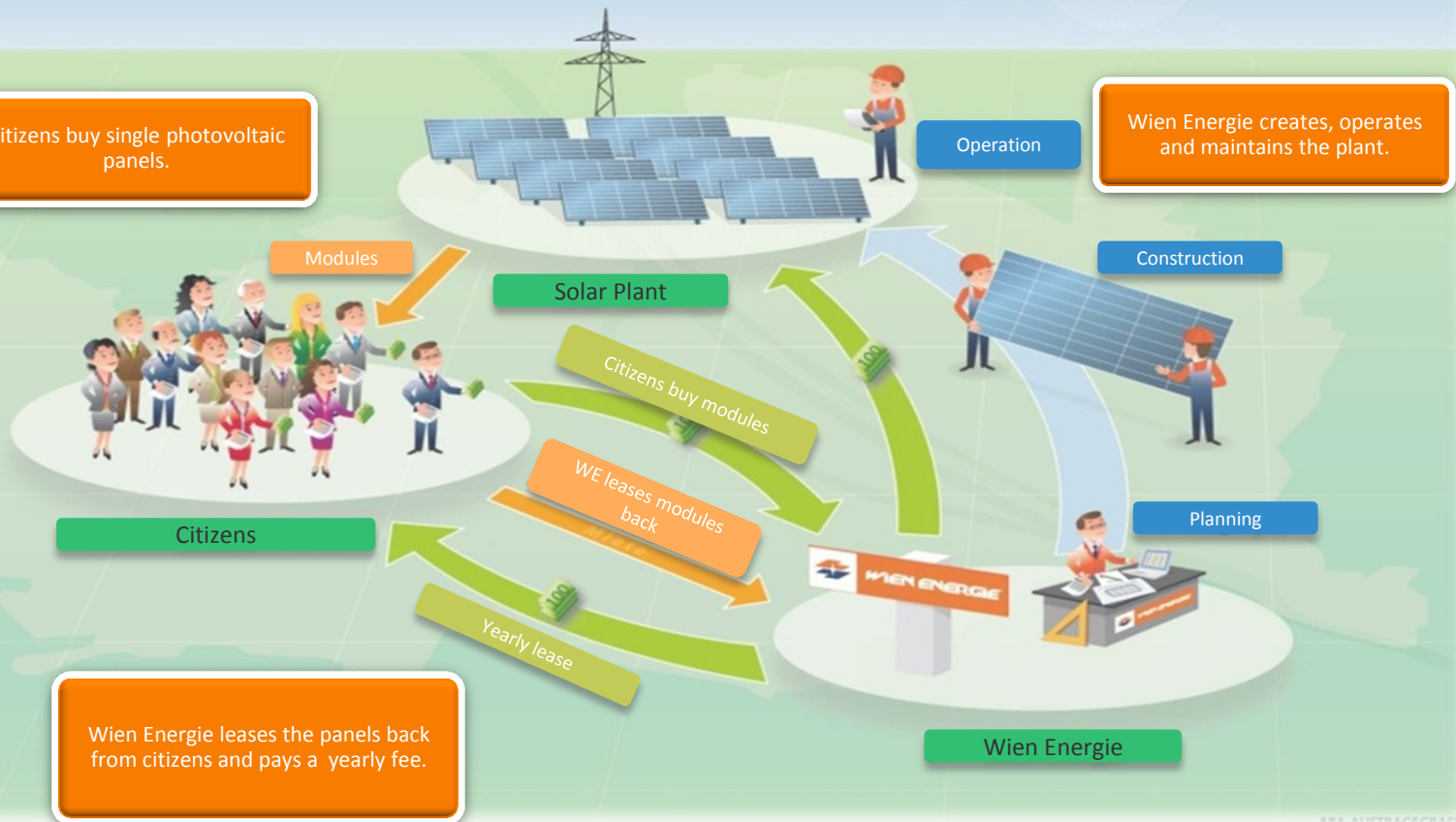


Key characteristics of the crowdfunding model



Vienna Citizens' Solar Power Plant: Sale & Lease Back

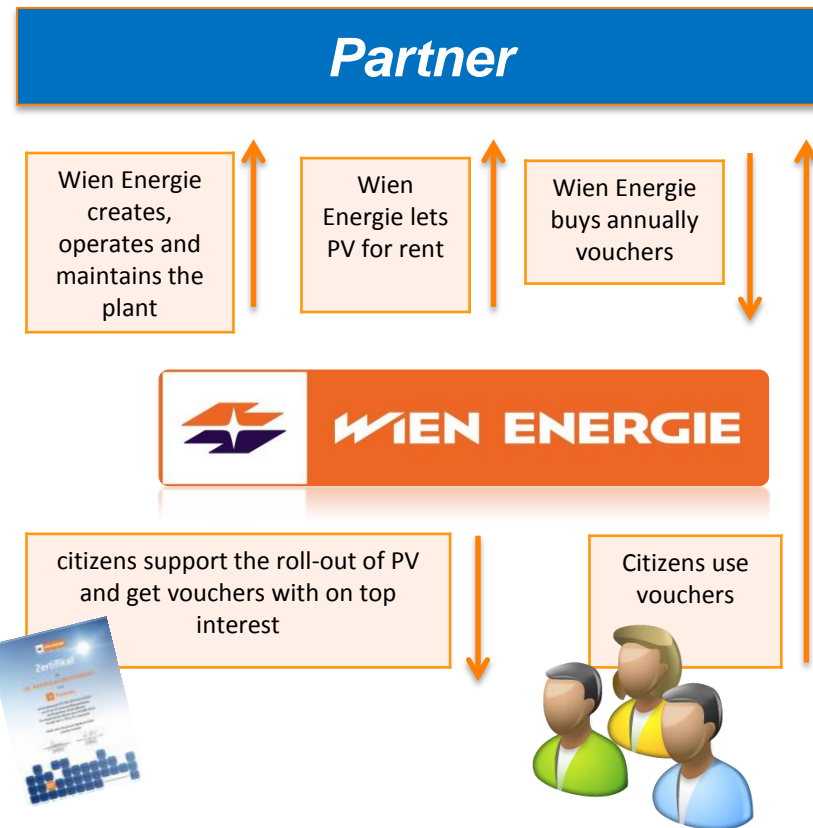
Citizens buy single photovoltaic panels.



Key characteristics of the crowdfunding model



Vienna Citizens' Solar Power Plant: Voucher-based



Key characteristics of the crowdfunding model



Web-Portal

www.buergerkraftwerke.at

WIEN ENERGIE

Presse Kontakt Zu Wien Energie Suchbegriff eingeben...

BürgerInnen Kraftwerke

Aktuelles Überblick Standorte Mitmachen News

Überblick

Beteiligungsmodele

Energieformen

Über das Projekt

Beteiligungsmodelle

BürgerInnen-Solarkraftwerk Wien

Wir bieten für die Beteiligung an unseren Kraftwerken unterschiedliche Modelle an.

→ Zu den Beteiligungsmodellen

Energieformen

Wir fördern den Ausbau von Solar- und Windenergie.

→ Zu den Energieformen

Über das Projekt

Mit den BürgerInnen Kraftwerken profitieren Sie und die Umwelt!

→ Worum geht es?

Sie sind hier: BürgerInnen Kraftwerke / Überblick

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WIENER STADTWERKE Ein Unternehmen der Wiener Stadtwerke AG

Importance and the benefits of the business Model – Crowdfunding



Benefits of of the crowdfunding models

- Economical possibility to make solar energy useable in urban areas
- Completely riskless for citicens – carefree!
- Overcome legal and directive barriers of in rent living citicens
- Promotes ecological awareness of viennes viticens and climate protection (get in touch with energy production)
- Supports quality of live in the hometown
- Enhancement of energy-independence
- Citicens create the energy revolution in hometown
- Local value add based on local partners und local energy production
- Formation of opinion benefits supports general PV roll-out

Success factors and challenges and project finance



Challenges

- Financial Market Authority (securities prospectus requirement, banking practice law)
- Suitable Location had to be found within a few weeks (project partner quit): structural analysis, connection with the grid, power transformer, shadowing, ownership structure, etc.
- regulatory approvals: many municipal authorities involved (electricity department, monument conservation, fire department, environment protection, department of building regulation, labor inspector, etc.)
- Time schedule (politics, call for bids, etc.)

Success factors and challenges and project finance



Success factors

Until now 22 Solar Power Plants realized

Enormous response – each of them sold out in a few minutes

All over about 25.000 Panels sold

Supply of approx. 3.000 Vienna households



Model replicated also on voucher basis

Model replicated also for wind power plants

Further projects under preparation

A woman with long dark hair, wearing a dark winter coat with a fur collar and a yellow scarf, is laughing joyfully in a snowy environment. Snowflakes are falling around her, and a child's legs in blue pants are visible in the background. The scene is bright and festive.

Thank you and Greetings from Vienna!

VON WIENERGIEBÜNDELN
FÜR WIENERGIEBÜNDEL.

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