

Les limites de la croissance de la smart city

Entretiens Jacques Cartier – 13 novembre 2018

Cécile Diguët (IAU IdF)

Éa
v&t



ADEME



Agence de l'Environnement
et de la Maîtrise de l'Énergie

GROUPE



AIX MARSEILLE PROVENCE

LA TRIBUNE

VILLE DE MARSEILLE
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INVITATION

LES RENCONTRES
DU FORUM
SMART CITY MARSEILLE
MÉDITERRANÉE

forum
Smart City
MARSEILLE MÉDITERRANÉE
by LA TRIBUNE

SMART CITIES
GLOBAL TECHNOLOGY AND INVESTMENT SUMMIT

June 27-28, Algiers
#smartcitysummitalgiers

Smart Cities
Expo World Forum

Smart City & IoT
Expo

9th-10th October 2018
Metro Toronto Convention
Centre, Toronto, Canada

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forum
Smart City
DU GRAND PARIS
by LA TRIBUNE

28/29 NOV 2017

smart city Africa
CASABLANCA

smart city expo CASABLANCA
18-19 MAI 2016
HYATT REGENCY

smart city connect CASABLANCA
17-20 MAI 2016
PLACE DE LA NATION 9

WWW.SMARTCITYEXPOCASABLANCA.COM

The International Conference on:
Future Smart Cities
25 - 27 Sep, 2018

ELSEVIER
SSRN

ARCHIVE

Springer

Open Data

Smart Retail

Smart Mobility

Smart Health

Smart Government

Internet of Things

Smart Agriculture

Smart Home

Education

Smart Grid/ Smart Energy

SMART CITY

LA TRIBUNE
Bordeaux

Live in @
LIVING CITY
THE INTERNATIONAL FORUM
OF THE HUMAN SMART CITY

forum
Smart City
BORDEAUX 2018

J'HABITE TU TRAVILLES, NOUS VIVONS.

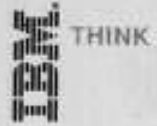
**HABITER LA VILLE,
PARTAGER LA VIE !**

MERCREDI 4 AVRIL 2018
BORDEAUX PALAIS DE LA BOURSE - #ForumSmartCity

2018 智慧城市展
**Smart City
Summit & Expo**
3/27 Tue ~ 30 Fri 南港展覽館
Taipei World Trade Center, Nangang Exhibition Hall

**Smart Cities
India 2015**
Exhibition and Conference

1- Origines de la smart city

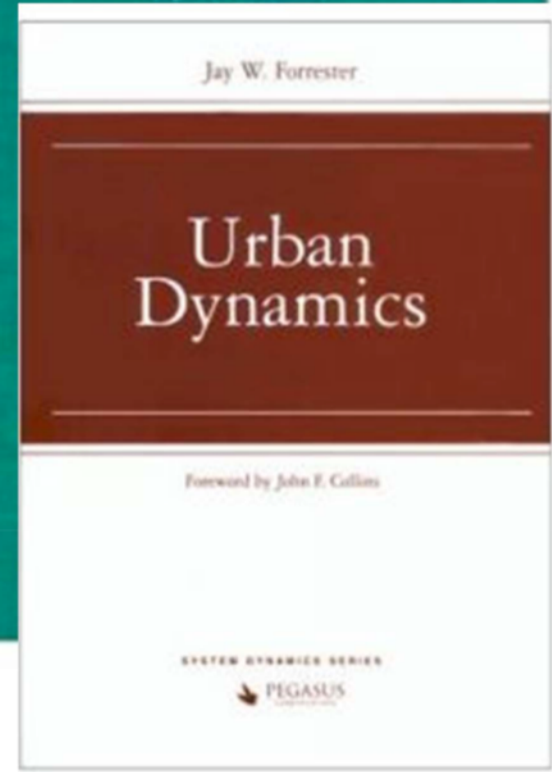
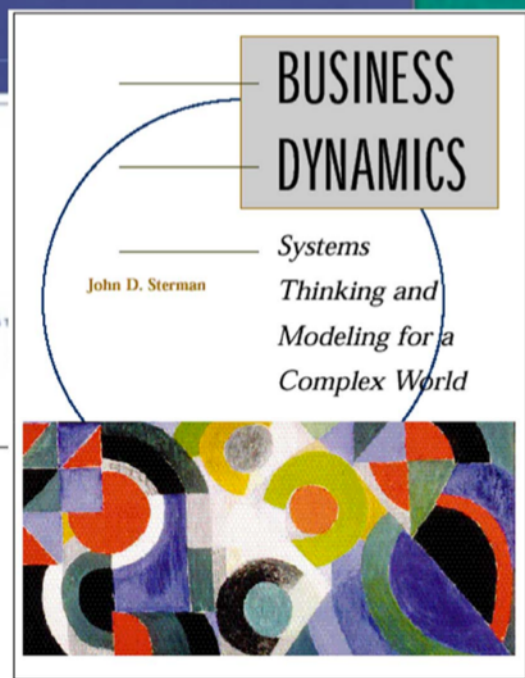
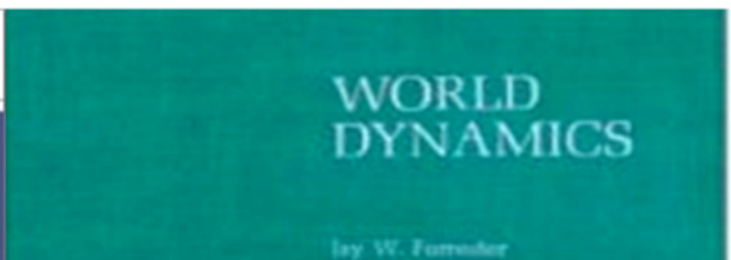
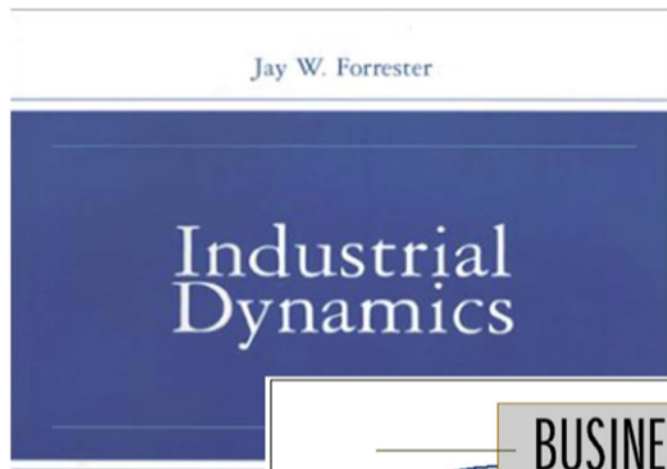
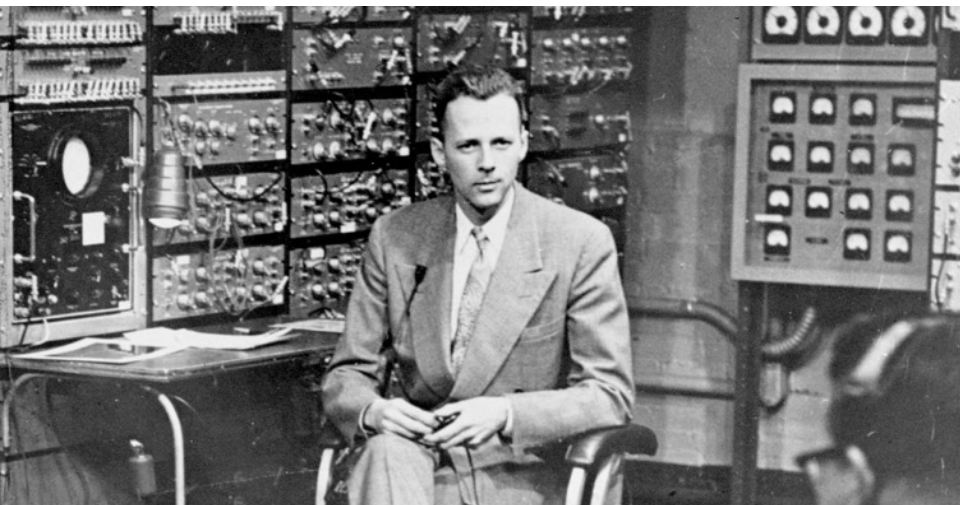


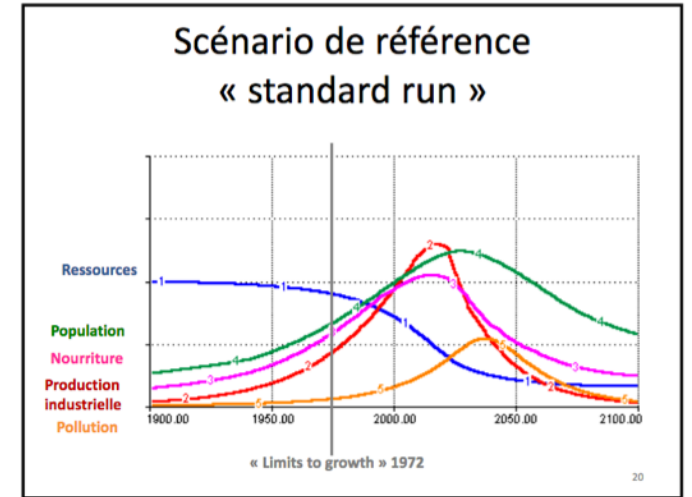
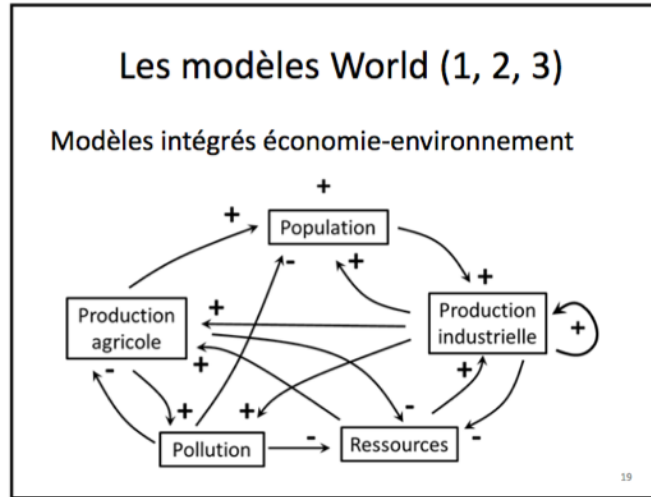
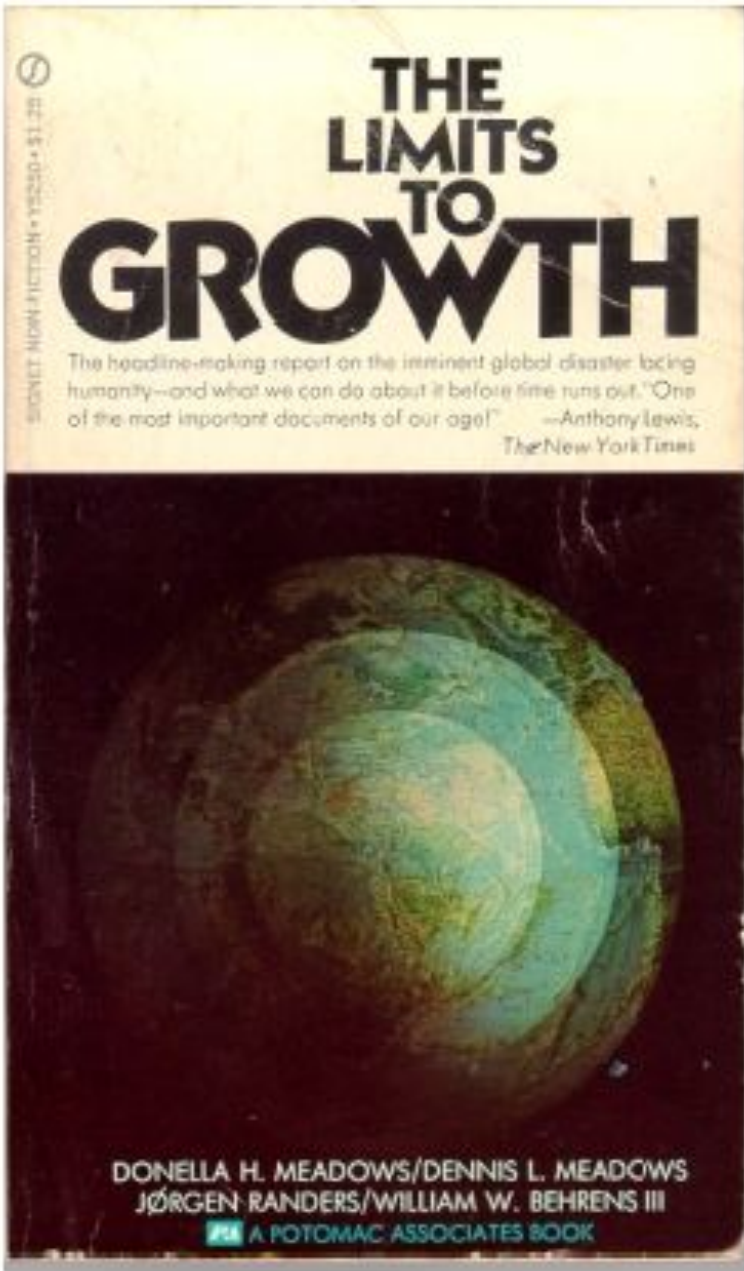
Conversations for a Smarter Planet. 1 in a Series

**A mandate for change
is a mandate for smart.**

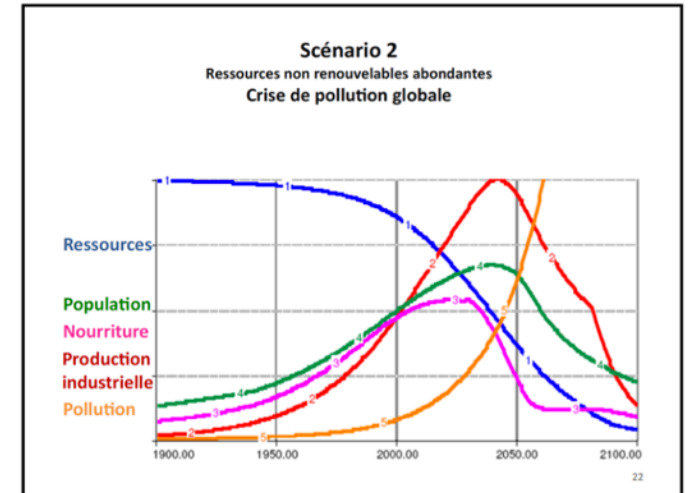


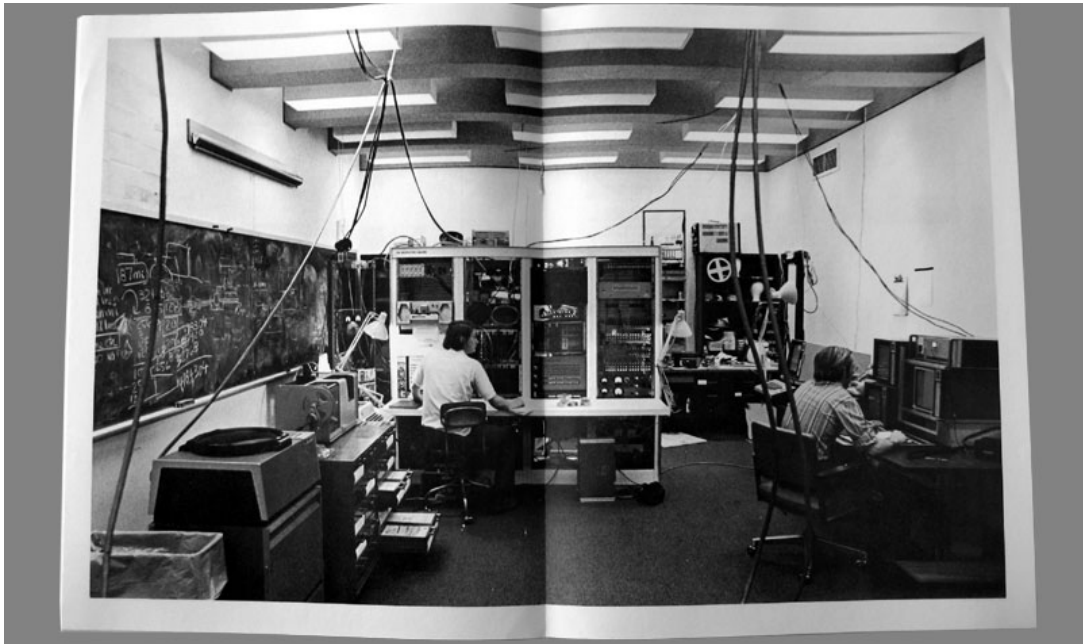
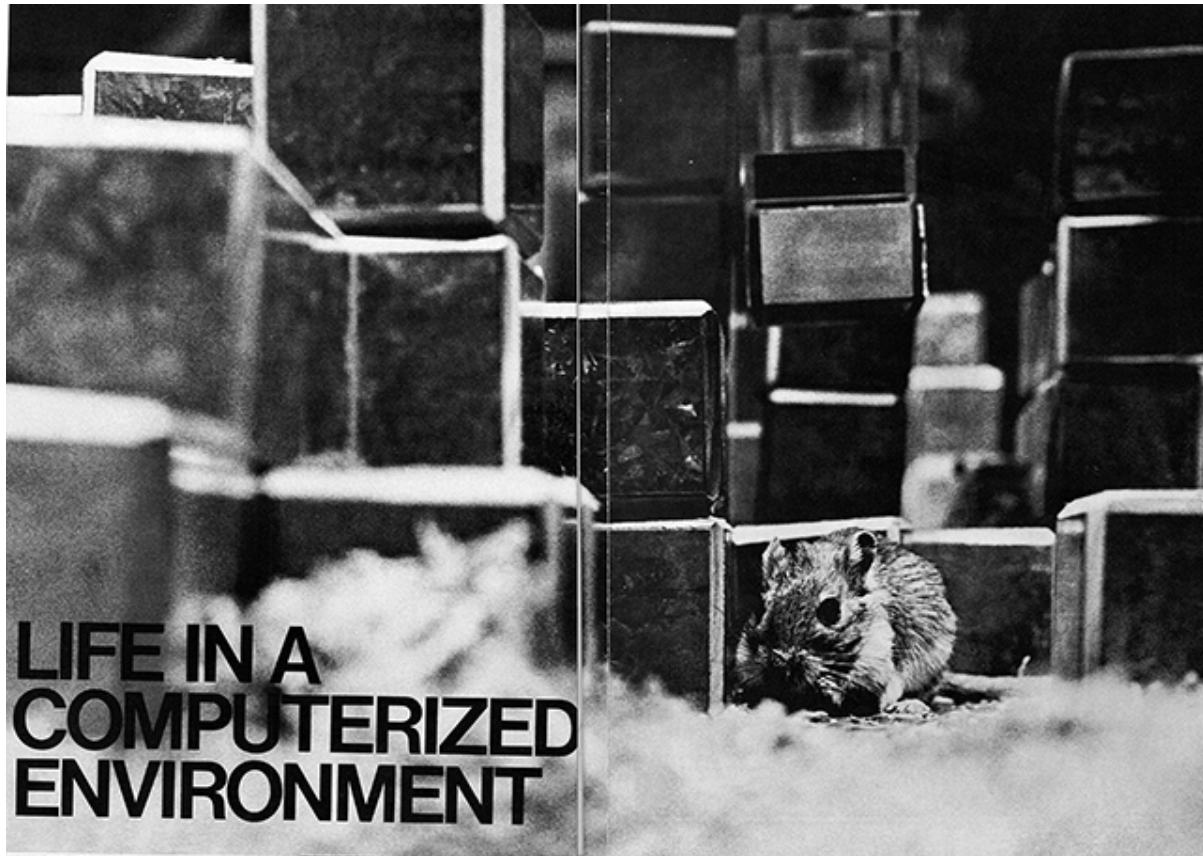
Smarter Cities





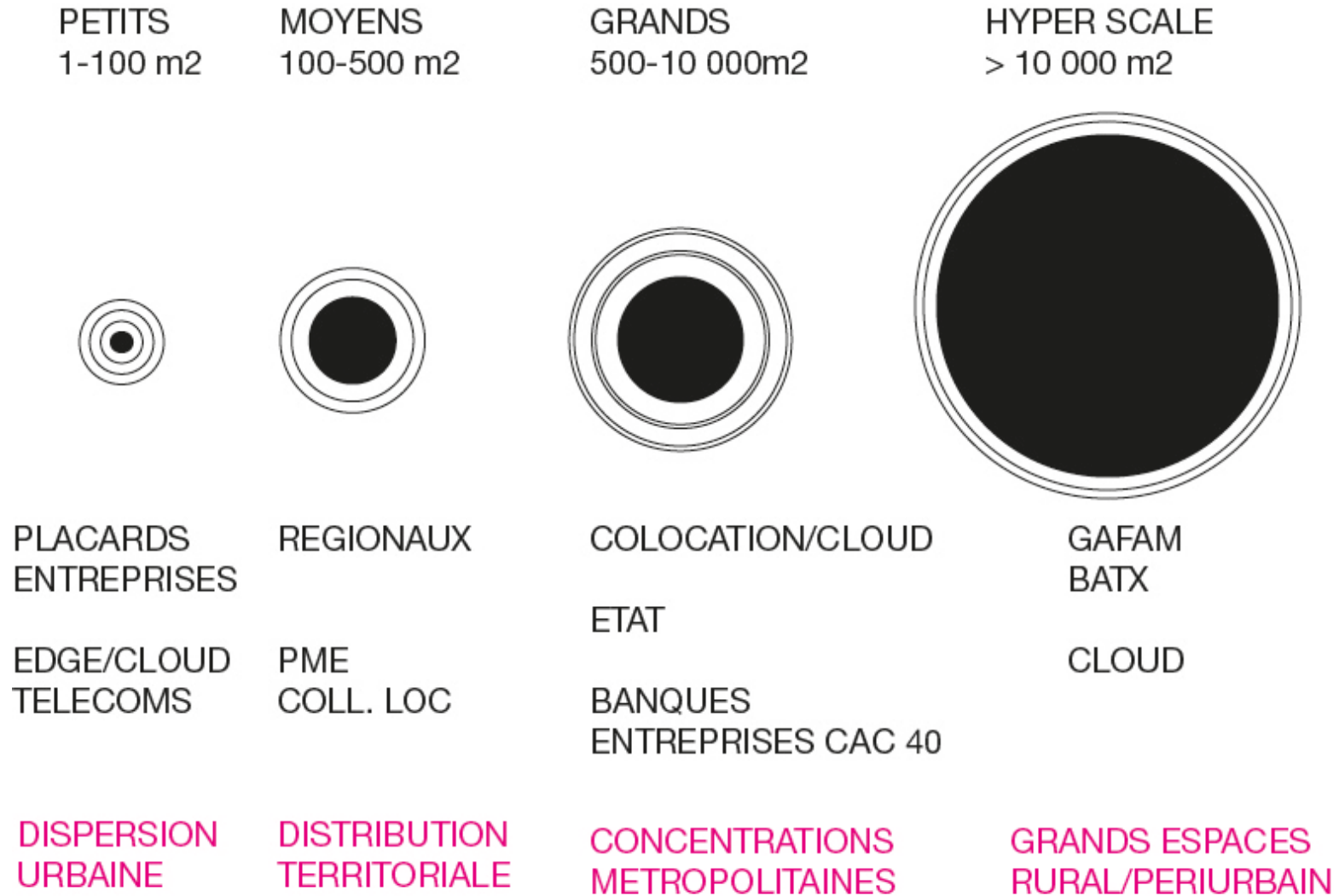
- ### Scénarios alternatifs
- Scénarios 2 à 6: ajout de solutions technologiques
 - Scénarios 7 et 8: ajout de politiques sociales volontaristes
 - Scénario 9 et 10: les deux ensemble (mis en place plus ou moins tôt)
- 21





1-Territoires numériques

Architecture de stockage/ implantations urbaines



New York



32 av. of Americas (ex-AT&T)

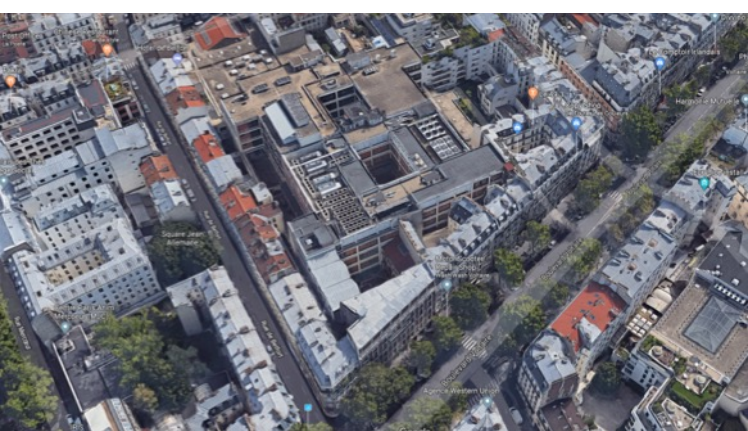


60 Hudson st (ex-Western Union)

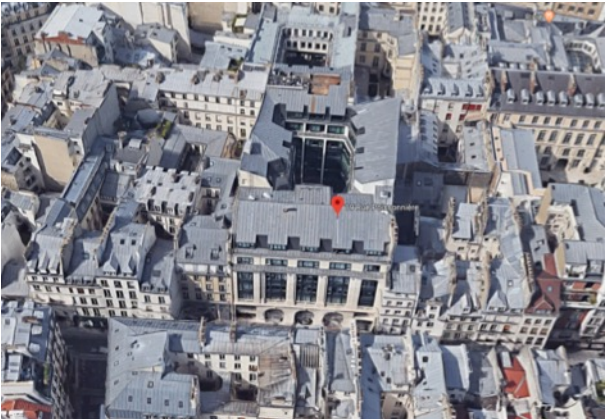
Paris



Telehouse Jeuneurs



Telehouse Voltaire



Zayo Jeuneurs

Périphérie métropolitaine: Plaine Commune



Interroute/Interxion St Denis



Interxion St Denis



Equinix St Denis

Santa Clara, Californie



Amazon, Umatilla



2-Les data centers dans le puzzle énergétique

La consommation électrique du numérique

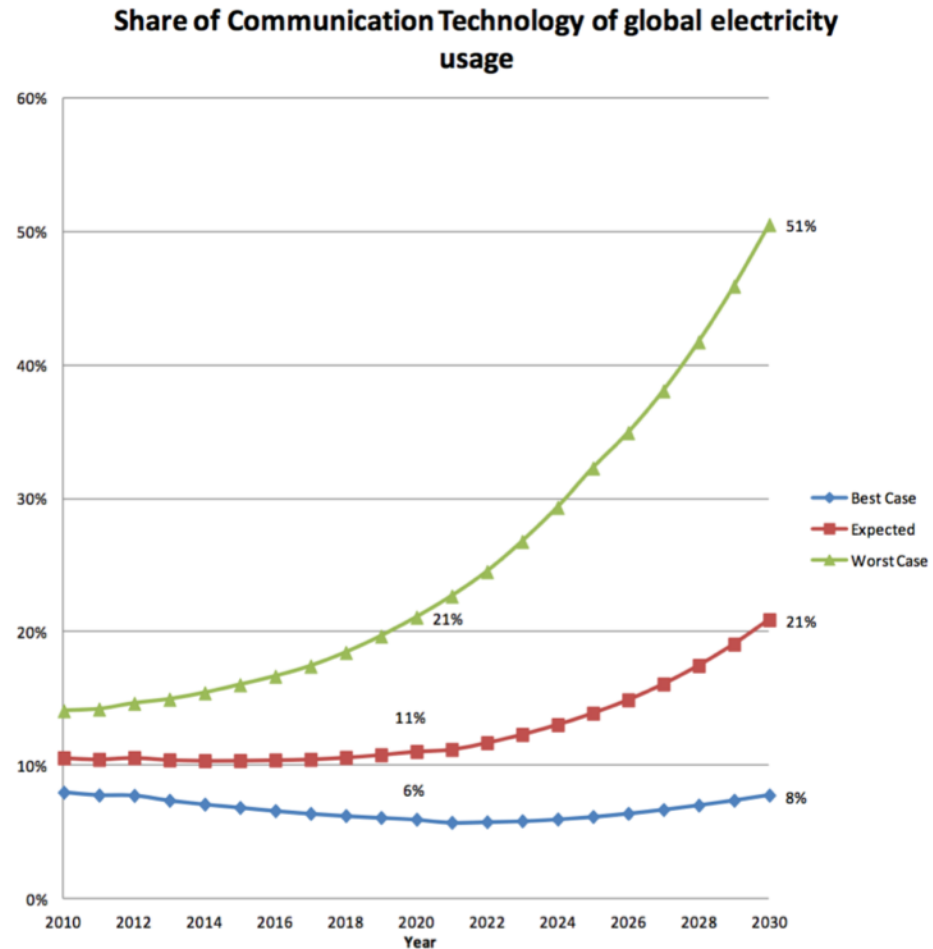
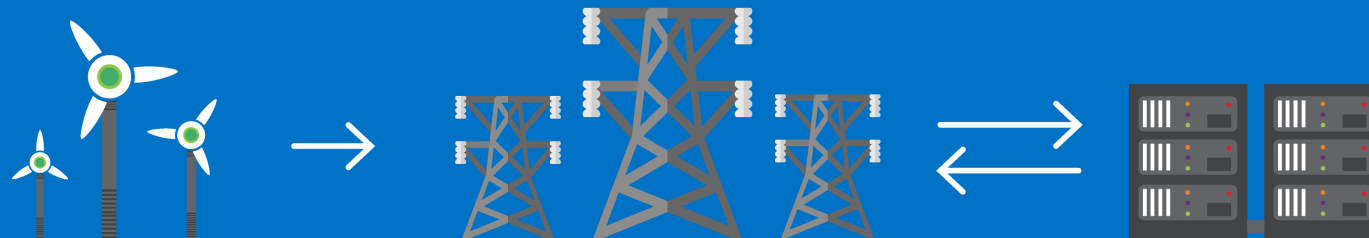


Figure 8. Share of communication technology of global electricity usage 2010–2030

Vers plus d'ENR? La pression des GAFAM sur les compagnies électriques

Microsoft's Latest Wind Energy Agreement

Microsoft is bringing more wind power to our datacenter in Wyoming, as the result of new agreements signed with Black Hills Energy and Allianz Risk Transfer. The agreements represent our largest purchase of wind power yet, for a total of 237 megawatts between the two projects. That brings our total purchase in U.S. wind energy to **more than 500 megawatts**.



Expanding Our Commitment

59 megawatts of wind power were purchased from the Happy Jack and Silver Sage wind projects to power our adjacent Cheyenne datacenter. All the renewable energy certificates were purchased under a long-term agreement with Black Hills Energy.

Promoting Renewable Energy

178 megawatts of wind energy from the Bloom Wind project in Kansas were purchased via a contract with Allianz Risk Transfer. Our commitment is helping to drive the development of new renewable projects.

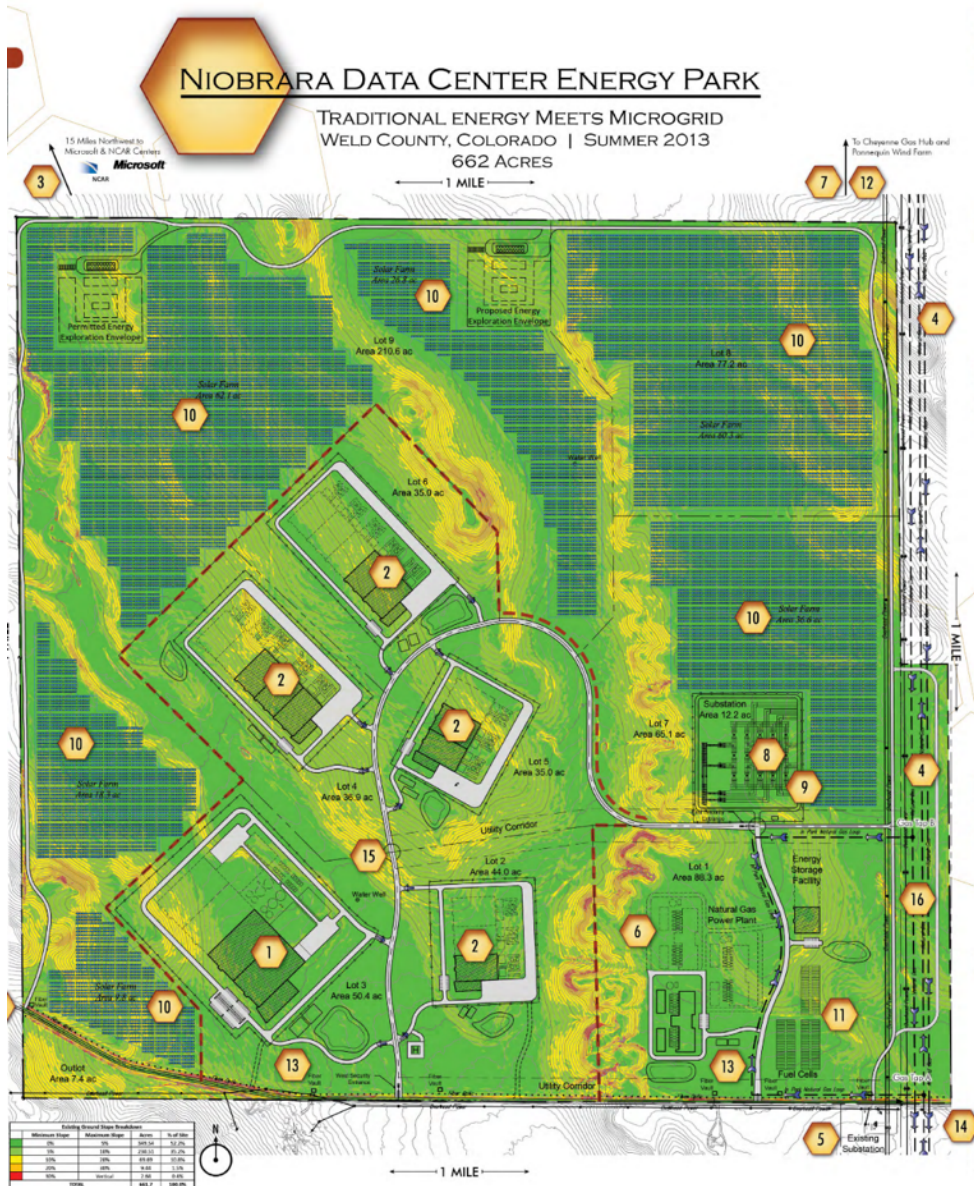
Putting Energy Back on the Grid

Our datacenter will act as an energy producer and grid backup. We're investing in next-generation natural gas generators to back up our datacenter. By partnering with Black Hills Energy, we're also using these generators to keep the lights on in the local community during times of high demand.

To learn more about Microsoft's green energy commitments, visit:

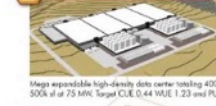
microsoft.com/environment
microsoftgreen.com

Autonomie énergétique et micro-réseaux



CLOUD DATA CENTERS

1 MEGA DATA CENTER



2 MID & SMALLER CENTERS



3 MICROSOFT & NCAR



Lot	Area (Acres)	Area (Sq Ft)	Area (Sq Ft)
Lot 1	85.3	3,690,000	3,690,000
Lot 2	35.0	1,470,000	1,470,000
Lot 3	50.4	2,076,000	2,076,000
Lot 4	35.9	1,476,000	1,476,000
Lot 5	44.0	1,760,000	1,760,000
Lot 6	25.9	1,036,000	1,036,000
Lot 7	12.2	498,000	498,000
Lot 8	77.2	3,088,000	3,088,000
Lot 9	210.6	8,424,000	8,424,000
Lot 10	182.7	7,308,000	7,308,000
Lot 11	24.3	972,000	972,000
Lot 12	12.2	498,000	498,000
Lot 13	7.4	296,000	296,000
Lot 14	7.4	296,000	296,000
Lot 15	35.9	1,476,000	1,476,000
Lot 16	35.9	1,476,000	1,476,000
Lot 17	12.2	498,000	498,000
Lot 18	12.2	498,000	498,000
Lot 19	12.2	498,000	498,000
Lot 20	12.2	498,000	498,000
Lot 21	12.2	498,000	498,000
Lot 22	12.2	498,000	498,000
Lot 23	12.2	498,000	498,000
Lot 24	12.2	498,000	498,000
Lot 25	12.2	498,000	498,000
Lot 26	12.2	498,000	498,000
Lot 27	12.2	498,000	498,000
Lot 28	12.2	498,000	498,000
Lot 29	12.2	498,000	498,000
Lot 30	12.2	498,000	498,000
Lot 31	12.2	498,000	498,000
Lot 32	12.2	498,000	498,000
Lot 33	12.2	498,000	498,000
Lot 34	12.2	498,000	498,000
Lot 35	12.2	498,000	498,000
Lot 36	12.2	498,000	498,000
Lot 37	12.2	498,000	498,000
Lot 38	12.2	498,000	498,000
Lot 39	12.2	498,000	498,000
Lot 40	12.2	498,000	498,000
Lot 41	12.2	498,000	498,000
Lot 42	12.2	498,000	498,000
Lot 43	12.2	498,000	498,000
Lot 44	12.2	498,000	498,000
Lot 45	12.2	498,000	498,000
Lot 46	12.2	498,000	498,000
Lot 47	12.2	498,000	498,000
Lot 48	12.2	498,000	498,000
Lot 49	12.2	498,000	498,000
Lot 50	12.2	498,000	498,000

8 separate separable high-density data centers building 600k sq ft at 112 MW Target CUE 0.43 WUE 1.04 PUE 1.18

Microsoft (Background) has a 3200 +/- million (1st & 2nd phase) center under construction. 15 miles northwest, NCAR (Background) just completed a 1.75M sq ft center housing 300k workstations housing the 13th fastest global computer.

CONVENTIONAL POWER

4 ON-SITE TRANSMISSION



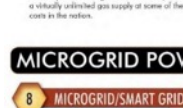
The site has high 750 kV lines offering redundant feed direction with 100+ MW excess capacity.

5 EXISTING SUBSTATION



Poudre Valley Electric Association's 7 MW existing Backstop substation has room for expansion to handle Phase 1 of the project.

6 CLEAN NATURAL GAS POWER



The site is zoned for on-up to 200 MW gas plant without public hearings. The site has an access to a virtually unlimited gas supply at some of the lowest costs in the nation.

7 CHEYENNE GAS HUB



5% to 7% of USA gas supply passes through this compression hub 2.5 miles north of the site. Three major gas lines are located in the eastern portion of the park providing redundant tap locations onsite.

MICROGRID POWER

8 MICROGRID/SMART GRID



The site is zoned for Smart Grid. Innovative opportunities exist for incorporation of Smart Grid and Microgrid. According to the research the project is the largest proposed microgrid on earth.

9 NEW SMART GRID SUBSTATION



The site is zoned for a new substation of any size. Initial conceptual designs are completed for 200 to 300 MW.

RENEWABLE POWER

10 UTILITY SCALE SOLAR



Site zoning allows for 50 MW/ 214 acres use shown representing 30 MW. Apple Madsen has 200+ acres of solar in the MC facility.

11 FUEL CELLS



Site zoning allows for up to 50 MW of fuel cells. Similar projects to use Bloom Energy fuel cells on Apple Madsen, MC (4.8 MW) and eBay Utah (6 MW).

12 NEAR BY WIND ENERGY



Seen from the site is a 30 MW wind farm only 20,000 feet north and on the same grid. Other farms in the area produce 325 MW.

NATURAL GAS, FIBER & WATER

13 ON-SITE FIBER



6 fiber connection vaults are currently installed with multiple 10 Gbps connections available. An empty conduit vault leading to the long haul 48 feet east.

14 LONG-HAUL FIBER



The above fiber provides an 48 feet east and one also nearby to the west and north for redundant feed direction. Dark fiber and a multitude of empty conduit east. 4 rugged stations are 3 miles north.

15 ON-SITE WATER SUPPLY



The State has approved 125 million gallons per year non-irrigatory on site. Two water tank vaults were drilled May 2012, yielding 325 CFM and 40 GPM.

16 ON-SITE NATURAL GAS



The west portion of the property has 3 parallel natural gas lines of 24", 30", and 12" with 2 flow directions. Total capacity is estimated at 1,500,000 MMBTU/D in day.

SUPPORT & WORKFORCE

17 BUSINESS ENVIRONMENT



Colorado Governor John Hickenlooper and Weld County Commissioners Corinna, Long, Killebrew and Rademacher review the project details with project developer Craig Harrison.

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18 VICINITY MAP AND WORKFORCE



A highly educated population of 310,000 is within a 30-mile radius of the site. 1.6 Million people within 75 miles.

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ECONOMIC ADVANTAGES

19 TAXATION BENEFITS

- No county or municipal sales and use tax (only state at 2.75%)
- No energy franchise tax
- Very low M&E fees for real property and business tax. Property will pay less (skipped 20% over the last 10 years)
- New HCLDR Bill 1029 allows 10 year, 100% abatement on business personal property tax by the county and special districts

20 OPERATIONAL BENEFITS

- Free outdoor air cooling allows approximately 45% energy efficiency
- The new NCAR data center 15 miles away operated its first year with no heat and no cooling
- The region has a very low cost of living index
- Lowest cost natural gas in nation

CONTACT

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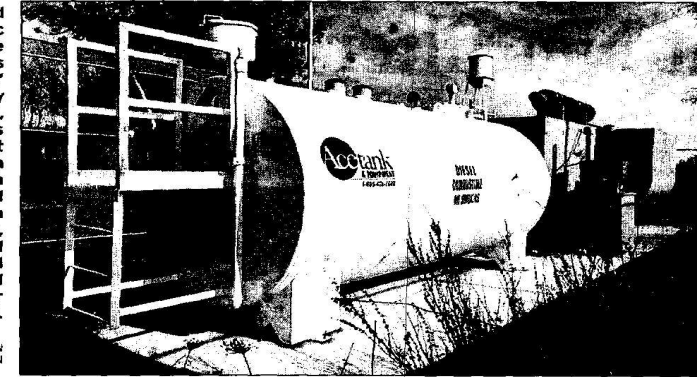
Redondance infrastructurelle et mutualisation





Portland General Electric plans to use dozens of its customers' emergency generators, such as this one at MacLaren Youth Correctional Facility in Woodburn, during cold snaps and expected summer power shortages.

BRENT WOJAHN
THE OREGONIAN



PGE may use idle generators to thwart rolling blackouts

So far, two customers have signed up for the program, which is beginning to attract attention nationwide

By BRENT HUNSBERGER
THE OREGONIAN

Portland General Electric is looking for a few good backup generators.

The utility hopes to stave off rolling electrical blackouts by taking over some of its customers' idle diesel generators.

For about a year, it's done just that in a pilot project in Woodburn with the state's largest youth correctional camp. With a click of a mouse on a downtown Portland computer, PGE engineers can fire up the new 500-kilowatt generator the utility installed outside MacLaren Youth Correctional Facility's fence.

Presto: MacLaren keeps its doors locked. PGE gets extra juice for its 728,000 customers.

"Our goal is to achieve 100 megawatts of virtual power plant," said Mark Osborn, who created PGE's Dispatchable Generator Program. That's enough to power 74,000 homes. "We're utilizing the underutilized assets of our customers."

service provider in Hillsboro have signed up for the program. Negotiations with other customers are under way, Osborn said. Utilities from Seattle and as far away as Florida are calling to see how the program works, said Osborn, who's worked since 1999 to develop it.

Environmental regulators, however, are a bit cautious.

The California Air Resources Board says diesel exhaust can cause cancer. And old generators lack controls to reduce the harmful emissions generated by burning diesel — sulfur dioxide, nitrogen oxide, carbon monoxide and fine particles.

Those pollutants contribute to acid rain, ground-level ozone and a brown haze. Significant amounts over time can mar visibility as far away as the Columbia River Gorge. They can cause problems nearby and create breathing problems in asthmatics, children and the elderly.

PGE estimates that each generator will produce 4 to 5 tons of nitrogen oxides each year.

The Oregon Department of Environmental Quality expects to adopt a policy next week that would allow PGE to fire up the generators if a sudden cold snap hits. By summer, the agency plans

PGE officials propose to negate the extra emissions by supplying low-sulfur fuel and asking large manufacturers around Portland to reduce energy use at times of peak power demand. By curtailing production of industrial furnaces and boilers, PGE officials said, the pollution coming out of smokestacks would subside as the generators in PGE's "virtual power plant" chug away.

Osborn is also talking with Northwest Natural about retrofitting generators to use cleaner-burning natural gas. And the utility is considering providing fuel to and improving the efficiency of Portland Public Schools boilers.

"Our goal in the program is zero net emissions," Osborn said.

But at least one PGE customer isn't fired up by the idea.

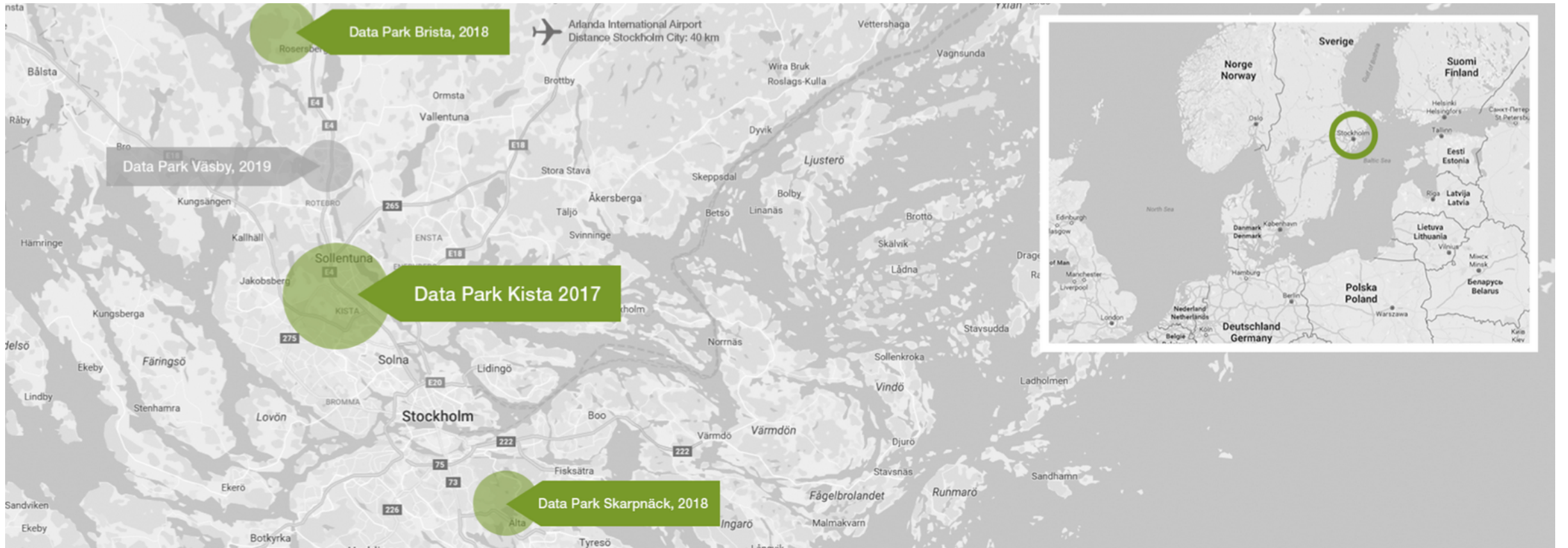
"I don't buy it," said Laura Culbertson, Oregon field representative for the National Environmental Trust, which works to reduce global warming. "I'm sure they will be able to find a mechanism to decrease the absolute horridness of the diesel generator. But you're still burning fossil fuels. In any scenario, that's more fossil fuels than we're currently burning right now."

PGE should be investing more resources in conservation, which



Portland dispatchable stand-by generation

Stockholm Data Parks



Récupérer la chaleur produite



AMO pour la mise en œuvre du projet urbain Village Delage –
Etudes Pré-opérationnelles

Mission « Relocalisation Data-center »

Etude d'opportunité de valorisation de la chaleur fatale

Rapport final

Novembre 2016

Rédaction :

Vincent Lenouvel (SAFEGE)

Martin Wain (SAFEGE)

Laura Bekri (EXPLICIT)

Matthieu Bugnon (EXPLICIT)



Récupérer la chaleur produite



Pour les immeubles en réhabilitation ou rénovation, piscines, hôtels, complexes sportifs :

Mise à disposition d'une chaudière numérique, adjointe d'un contrat de fourniture de chaleur à un prix stable et compétitif et une réduction de facture énergétique immédiate. Stimergy prend en charge tous les coûts de fonctionnement des chaudières numériques (consommation électrique, abonnement fibre optique) et votre bâtiment bénéficie de toutes les calories de notre datacenters. La **maintenance est gratuite** sur la durée du contrat.



Pour les bâtiments neufs, Eco quartiers, immeubles neufs, immeubles intelligents :

Vente d'un système de performance énergétique garantissant un gain autour de 9kWh/m²/an sur l'enveloppe énergétique du bâtiment (RT 2012) ce qui en fait la solution EnR&R de préchauffage d'eau chaude sanitaire la plus compétitive du marché. Notre dispositif bénéficie d'un TitreV Système.

Nous vous proposons un contrat de vente de notre dispositif assorti d'un contrat d'exploitation et de maintenance gratuit garantissant une fourniture de chaleur décarbonnée à votre bâtiment sur la durée du contrat. Stimergy prend en charge tous les coûts de fonctionnement des chaudières numériques (consommation électrique, abonnement fibre optique) et votre bâtiment bénéficie de toutes les calories de notre datacenters.



Benvingut a la plataforma de participació de Barcelona.
 Construïm una ciutat més oberta, transparent i col·laborativa.
 Entra, participa i decideix

Pàgina [Discussió](#) Mostra [Mostra el codi](#) [Mostra l'històric](#) Cerca a The Things Network Catalunya Wiki

The Things Network Catalunya
 (S'ha redirigit des de: Pàgina principal)

Xarxa comunitària de l'Internet de les coses

Som un grup de persones i entitats interessades a fomentar la sobirania tecnològica, l'autonomia social i la tecnològica a partir de la construcció d'una xarxa de dades d'Internet de les coses oberta, lliure, neutral creada col·lectivament des de baix.

Contingut [amaga]

- 1 Estem fent un programa pilot! Vols formar-ne part?
- 2 Comunitat, jornades, hackatons
- 3 Recursos, continguts i aprenentatges
- 4 Qui diuen i qui diem de TTNCat?
- 5 Llistat d'entitats padrines, amigues i persones actives

Estem fent un programa pilot! Vols formar-ne part?

Volem que un dels principals eixos d'acció de la comunitat sigui promoure la generació de negocis en obert i generar retorn social a través de l'ús d'aquesta tecnologia. [Informa't sobre com participar](#)

- Vine als tallers i trobades programades. (Ens reunim el primer dimecres de mes al mgdia, 13.00h (amb carmanyota) + el tercer dijous de mes a la tarda (18.30h), s'anuncia a la llista de correu)

Quayside, Toronto – Sidewalk Labs (Google)

Digital Layer

Buildings

Mobility

Public Realm

Infrastructure

PHYSICAL LAYER

