The Future of Cleantech in 2020

George Thorpe, P.Eng,
VP R&D

BI Pure Water Inc.

加拿大碧纯 (BI Pure) 水处理公司

Energy, Water and Wastewater Sustainability

- 创新来自碧纯! 来自加拿大的创新水处理技术
- 碧纯 (BI PURE) 水处理公司成立于1995年。公司位于加拿大卑诗省Port Kells 工业区，距离温哥华市中心约35分钟。碧纯水处理公司的目标是提供最高客户满意度和环境标准的一体化给水和废水处理系统和设备。碧纯 (BI PURE) 所提供的 给水和废水处理系统以低价高效, 运行稳定可靠而著称。
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- 数百套系统采用超滤、纳滤、反渗透、紫外线消毒等先进处理技术的碧纯 (BI Pure) 水处理系统成功地运行于加拿大和世界各地, 其中许多系统原水水质复杂并处极端地域环境。

Energy, Water and Wastewater Sustainability

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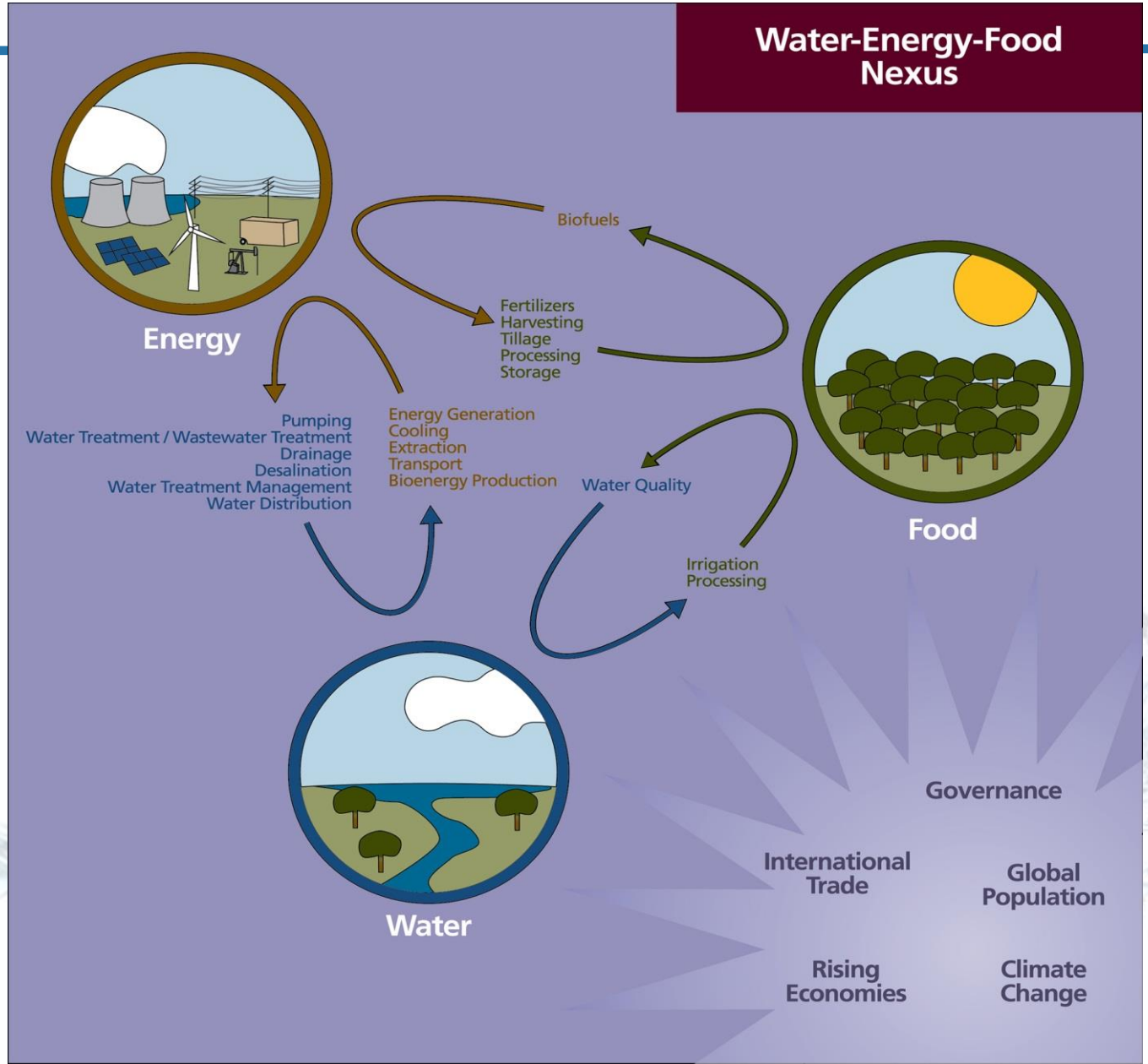
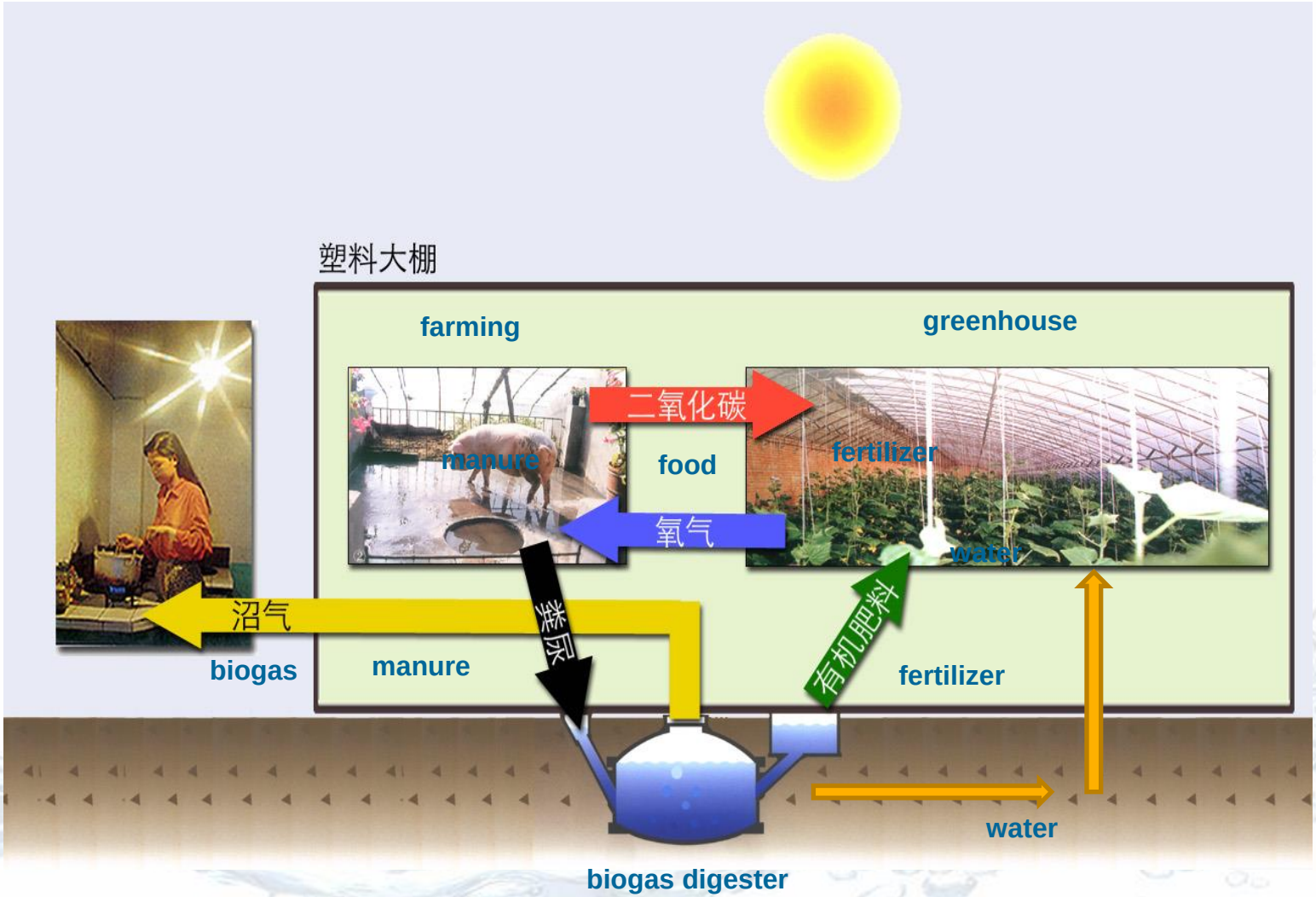
- 采用膜生物反应器、移动床生物反应器、序批式生物反应器、以及创新专利技术间歇自动反冲生物滤池，超级二级氧化电絮凝 以及高级催化氧化系统， 碧纯 (BI Pure) 废水处理专家能够为客户提供创新定制的废水处理解决方案，包括生活污水，难降解工业废水及垃圾渗滤液。

Energy, Water and Wastewater Sustainability

Energy, Water and Wastewater Sustainability



Energy, Water and Wastewater Sustainability



Energy, Water & Wastewater Sustainability – 2017 Challenges

Struvite Plugs Pipes

Nutrients

Handling Costs

Missed Cash Opportunity

Drought

Floods & CSOs

High Energy Costs

Water

Energy

Boil Water Orders

New Chemicals in WW

GHG Emissions

Potential Outages

Environmental Impact

Overburdened &
Old Infrastructure

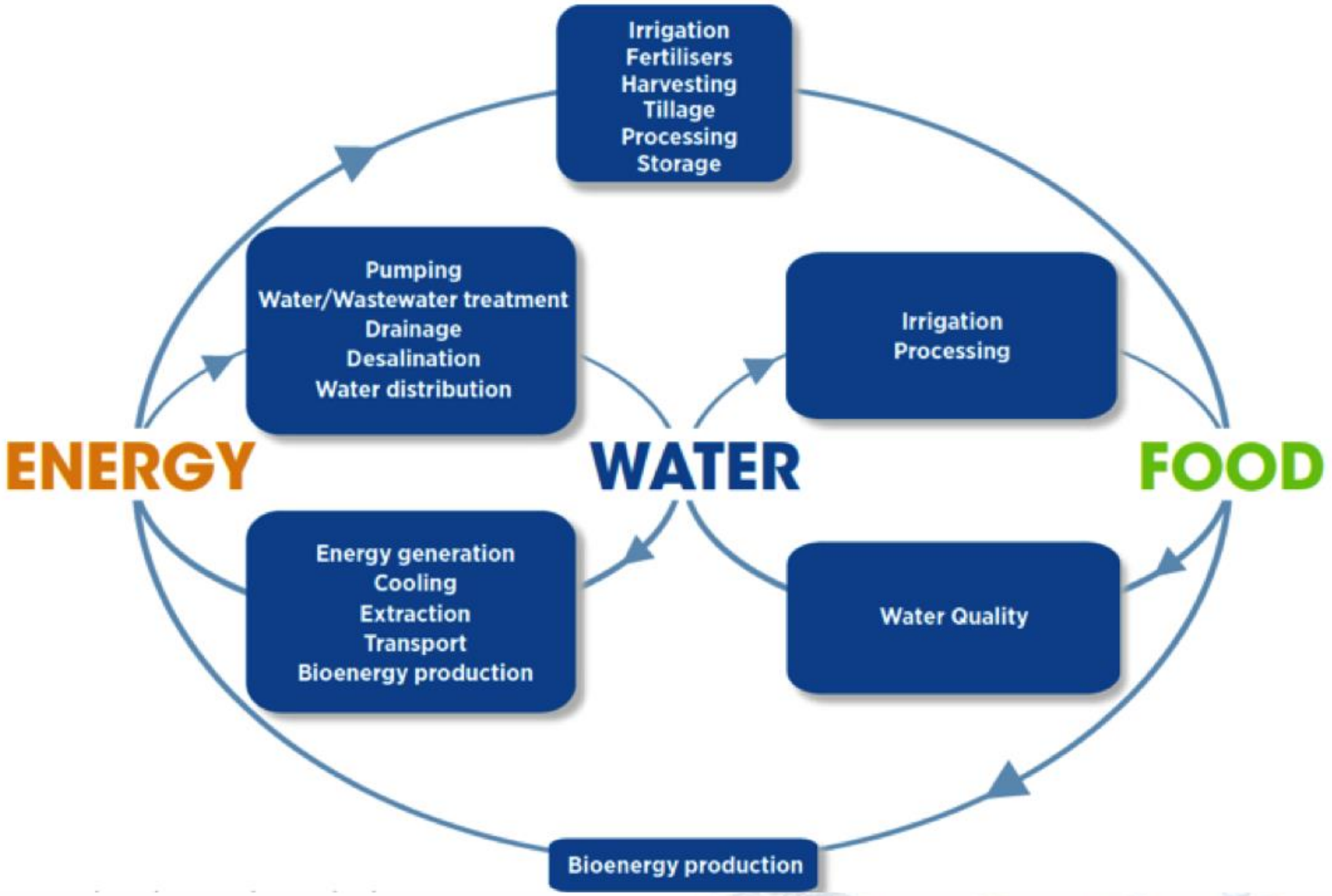
Sustainability

System Resiliency

Risks

Operations/Operators

Energy, Water & Wastewater Sustainability – 2017 Challenges



Energy, Water & Wastewater Sustainability – 2017 Challenges

WATER CHALLENGES

New Chemicals in WW

- The need to treat a long list of emerging contaminants (ECs) is moving to the front line of water management.
- Pesticides, pharmaceuticals, personal care products and endocrine disrupting compounds are among the prime examples of emerging contaminants.
- Did you know that up to 90% of oral drugs pass through the human body and end up in the receiving waters?

Energy, Water & Wastewater Sustainability – 2017 Challenges

WATER CHALLENGES

Contaminant Candidate List (CCL) Analytes

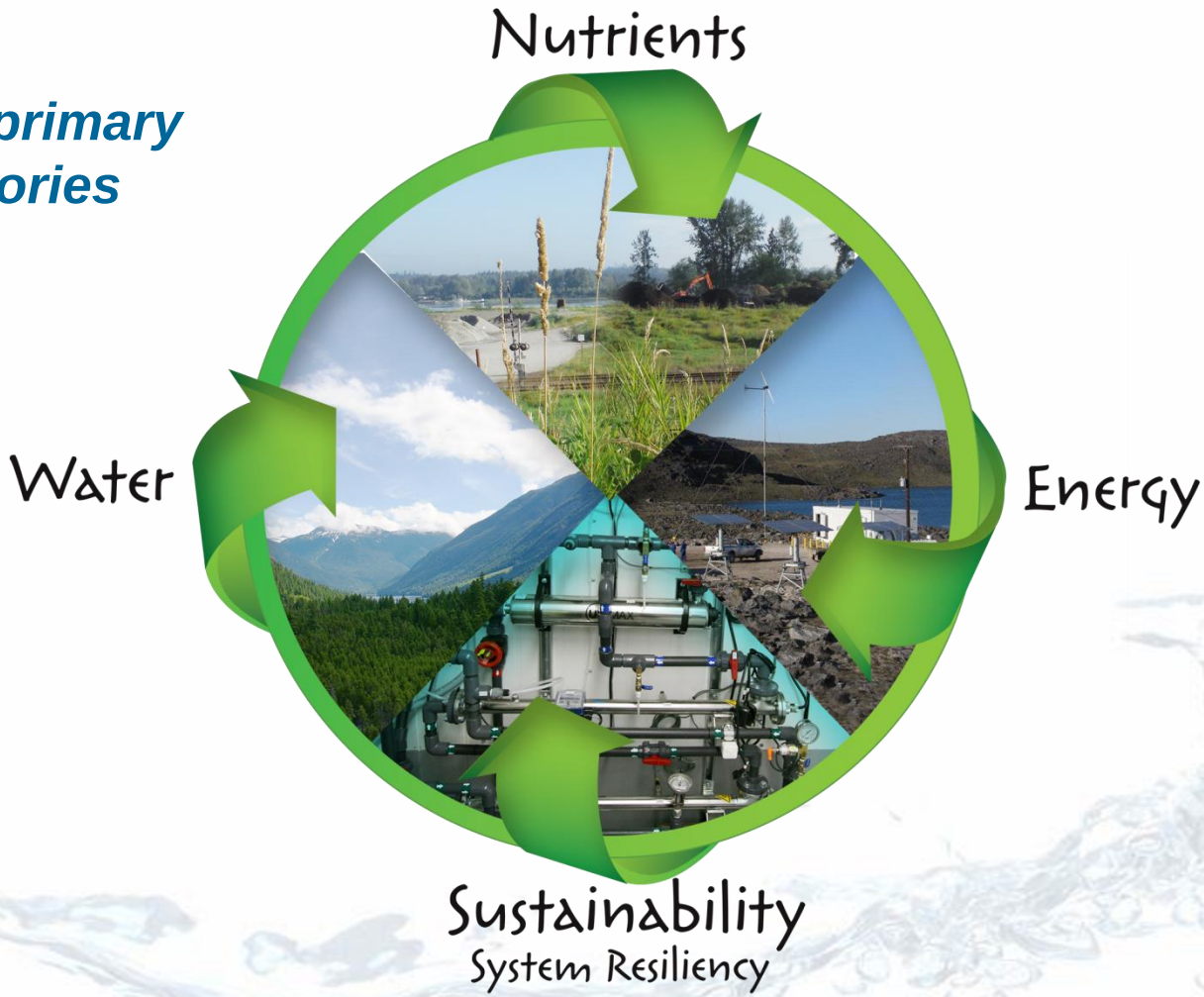
- Pharmaceuticals
- Endocrine Disrupting Chemicals (EDCs)
- Polybrominated diphenyl ethers
- Algal toxins
- *Cryptosporidium & Giardia*
- Organotins
- MTBE (methyl-*tert*-butyl ether)
- DBPs (including NDMA)
- Perchlorate
- Arsenic

Energy, Water & Wastewater Sustainability – 2017 Challenges

- Polybrominated Diphenyl Ethers (PBDEs)-
- Endocrine Disrupting Compounds-Alkylphenols-detergents, Phthalates
- Upcoming Priorities (Candidates for Monitoring) :
  - PPCPs (Pharmaceuticals and Personal Care Products) Diclofenac,Ibuprofen, EDCs
  - Veterinary pharmaceuticals for animal feeding
  - MTBE and related compounds

Energy, Water & Wastewater Sustainability – 2020 Solutions

Four primary categories



Energy, Water & Wastewater Sustainability – 2020 Solutions

Nutrients

Waste Sorting

- Sort at source
- Compost Organics
- Reduce Items Going to Sewers

Recover & Sell Nutrients

- Bioreactors
- Separate Nutrients
- Genetic Engineering

Energy, Water & Wastewater Sustainability – 2020 Solutions

Distributed Generation

- Prevents Outages with Grid as Backup
- Renewable Energy Systems

Energy Revenue - Feed Power Back to Grid

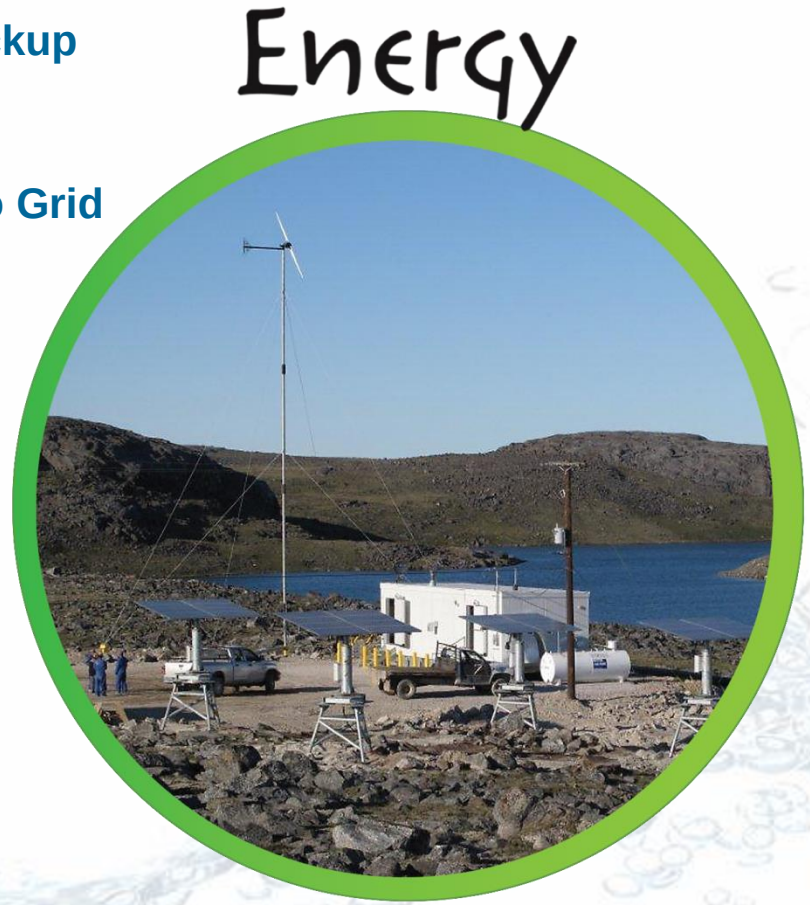
- Zero E Power Cells for WT
- WW Bio Gas to feed Generators
- E-Cat, Backlight, etc.

Distributed Treatment

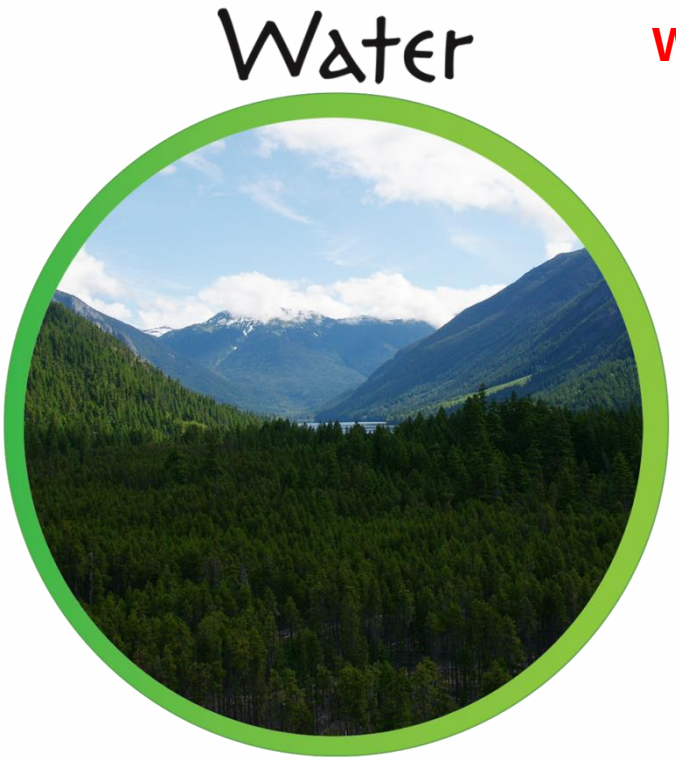
- Eliminate Miles of Pipelines
- Eliminate kW Hours of Pumping

Energy Management

- New Optimizing Software
- VFD Control Systems
- Peak Demand Reduction



Energy, Water & Wastewater Sustainability – 2020 Solutions



Treat Emerging Contaminants

- Electrosorption
- Advanced Ultra Violet

WATER & WASTEWATER

Watershed Management

- New Software
- Funding for Improvements
- Restrictions on Use

Package Plants

- Design/Build
- Bundled Projects
- Operations optimization

Recycling/Reuse

- Reduced Energy Cost
- Public Acceptance
- New Technologies

Energy, Water & Wastewater Sustainability – 2020 Solutions

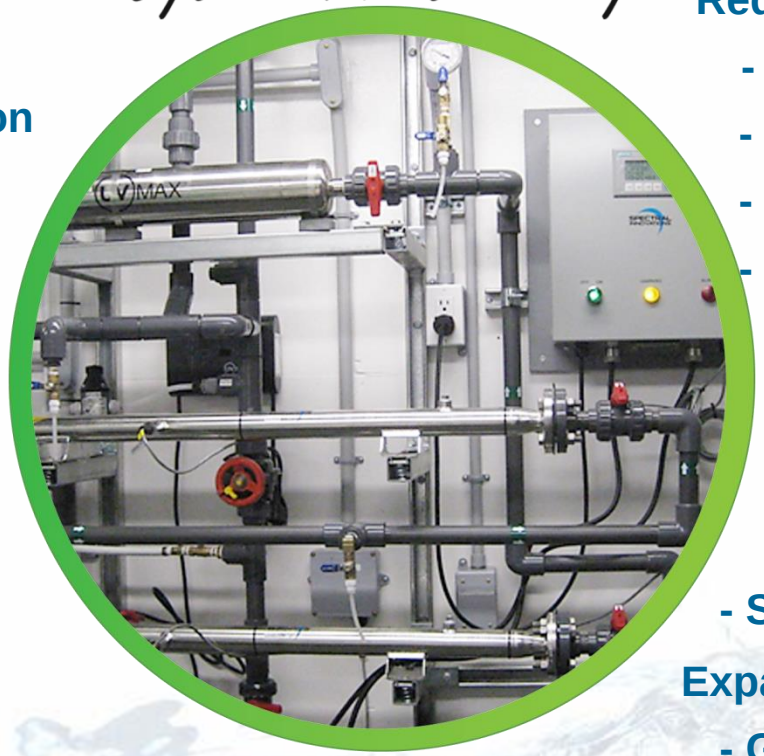
Water

- Distributed or decentralized plants for water treatment are ideal for the replacement of facilities and may be an alternative solution when large centralized treatment plants are either outdated or overloaded.

Rather than add new piping, pumping and expanded megaplants to address new development areas within a community, compact distributed or decentralized plants can take over some of the load.

Energy, Water & Wastewater Sustainability – 2020 Solutions

Sustainability
System Resiliency



PPP for Infrastructure
- Private Design /Build/Operate
- Increase Speed of Implementation

True Cost of Water & WW
- Calculate Costs
- Educate People
- Increase Funding

Other New Technologies
- See Next Page

System Resiliency
- To Climate Change
- To Other Factors

Reduce Environmental Impact
- Distributed Generation
- Recover & Sell Nutrients
- Low Impact Development
- No Diesel Powered Vehicles

Remote Monitoring/ Control
- High Speed Communications
- Smart Phone Apps.

Expanded Operator Training
- Government Funding
- Circuit Rider Training Program

Thank You

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georget@bipurewater.com

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