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Top 5 New and Innovative Water-Efficient Products - 2010

by

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watersmart'10™
INNOVATIONS

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Disclaimers

- ✓ The authors (Gauley & Koeller) have no special interest, financial or otherwise, in the products, technologies, companies, or organizations manufacturing, promoting, or selling the products described in this presentation.
- ✓ This presentation identifies those products that, **in the authors' opinion**, are innovative, and likely to result in substantial water savings.



Criteria for selection...

- ✓ Indoor water use reduction (irrigation is another matter)
- ✓ Residential and non-residential applications
- ✓ Generally available in the marketplace
 - A product, technology, or program
 - Can be a new approach to an old application
 - *But*, no “ideas” or undeveloped products
- ✓ Water use can be determined
 - Field *or* laboratory - “real world” preferred
- ✓ Potential for significant, long-term impact
 - Regional *or* all of North America
 - Potable *or* non-potable water



How did we select?

- ✓ Work with manufacturers & industry leaders
- ✓ Feedback from water utilities & water efficiency practitioners
- ✓ Laboratory and field testing by Veritec, Koeller, & others
- ✓ Interviews with other stakeholders...
 - Green building advocates
 - WaterSense[®] implementation team members
 - Facilities managers and property owners

#5 High-Efficiency Commercial Dishwashers

- ✓ 150,000 high-capacity DWs in N.A.
 - Conveyor & Flight-type
 - Many over 15 years old
 - Energy costs driving machine efficiencies

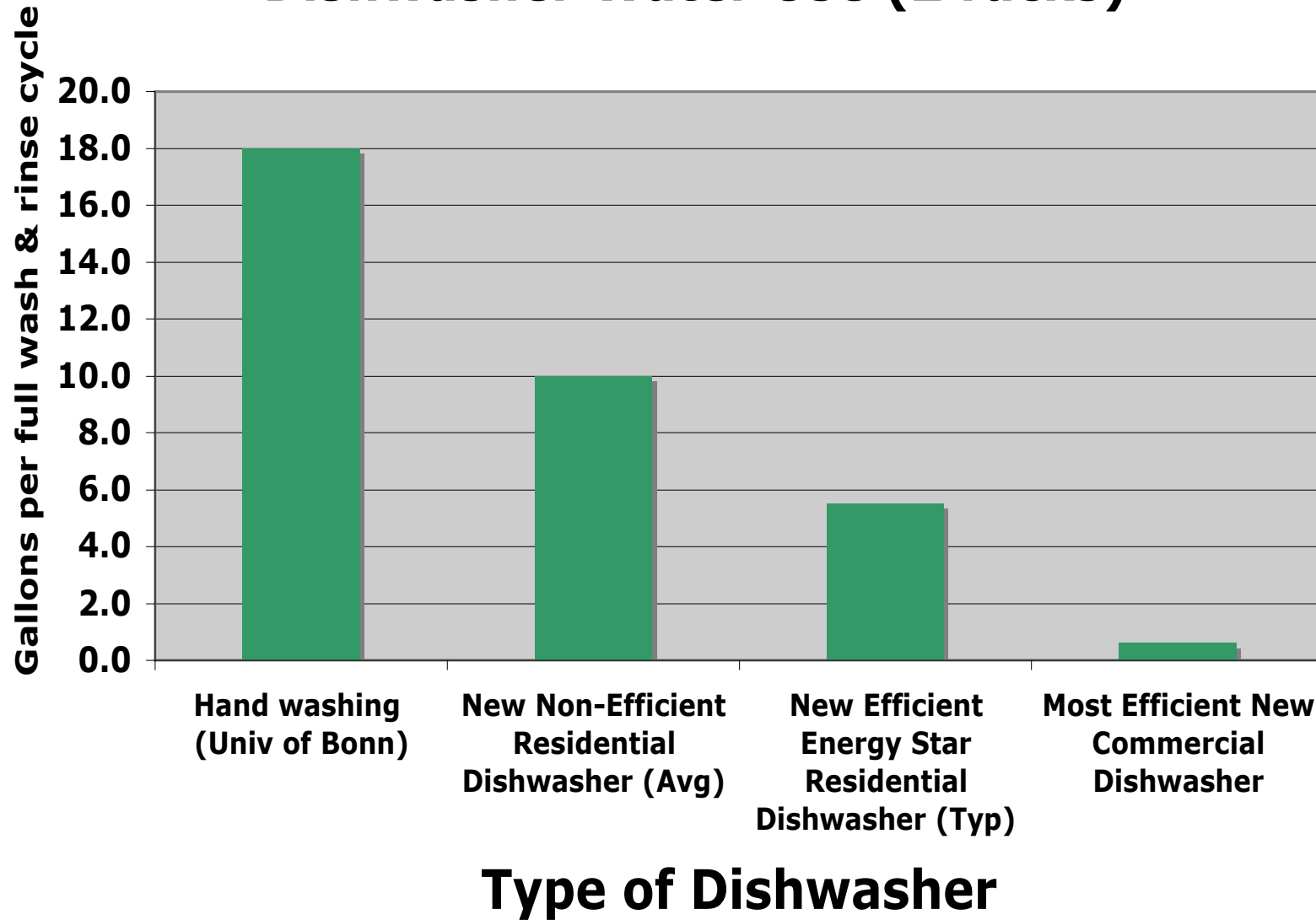




#5 High-Efficiency Commercial Dishwashers

- ✓ Evolution of hot water use efficiency to wash, rinse, sanitize
 - 1990s - 2.5 gallons per rack (9.5 Litres)
 - 2000 - 1.2 gallons per rack (4.5 Litres)
 - **2010 - 0.3 gallons per rack (1.1 Litres)**
- ✓ Standard DW 'rack' - 20" x 20" (500 mm x 500 mm)
 - Capacity equivalent = ~30 plates

Dishwasher Water Use (2 racks)





#5 - High-Efficiency Commercial Dishwashers

...for U.S.-Canada

- ✓ Total potential annual potable water savings - estimated -
21 billion gallons or 80 bil. litres

TOP PRODUCT #4

Waterless Wok

The “typical” kitchen!





#4 - Waterless Wok

- ✓ Originally conceived & developed in Australia - Sydney Water & others
- ✓ U.S. development: Wok Water Saver
 - Double-burner wok table
 - Burner efficiency same as conventional
 - Water recirculation loop to external chiller
 - ✓ Removes excess heat from wok table
 - ✓ Only 2.3% additional energy
 - Savings = ~120 gallons per hour



#4 - Waterless Wok

...for U.S.-Canada

✓ Total potential **annual** potable water savings -

**37 billion gallons or
140 billion litres**

✓ BUT, a “difficult sell”



#3 Hot water demand system (after-market)

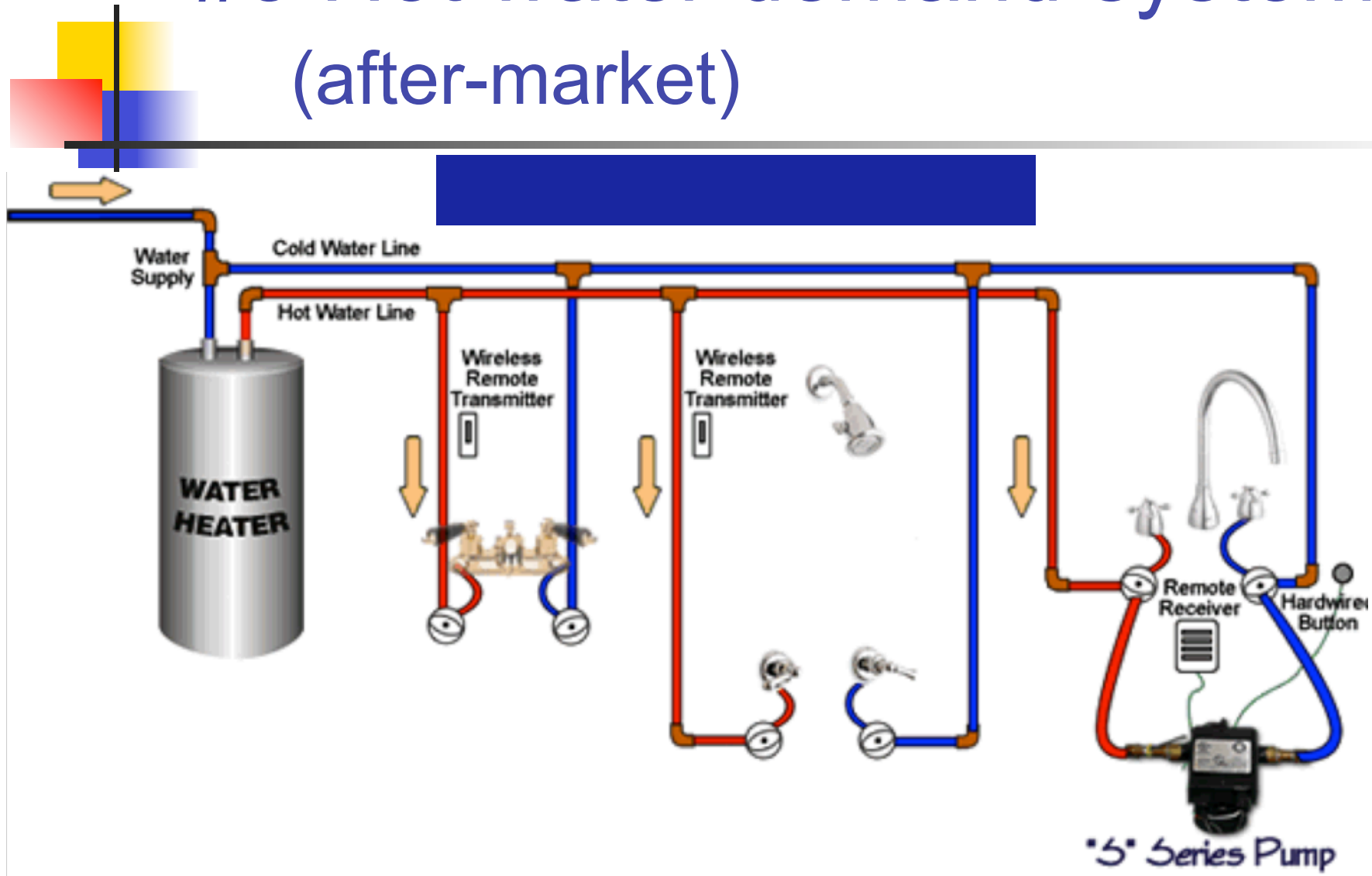
- Not “new”available for years
- Used to reduce “wait time” for hot water
 - Primary user benefit
 - Water use reduction a secondary benefit
- Not a “tankless water heater” nor “point-of-use water heater”



#3 Hot water demand system (after-market)

- Uses dedicated 'return line' OR existing cold water supply line
- Timer, temperature-controlled, or "on-demand"
- Barrier to installation: requires electrical outlet under lav sink furthest from water heater
(cost of unit PLUS cost of electrician)
- User/homeowners install for convenience and just happen to save water

#3 Hot water demand system (after-market)





#3 Hot water demand system (after-market)

...for U.S.-Canada

✓ Total potential annual potable water savings -

**250+ billion gallons or
950+ billion litres**



#2 - After-market dual-flush retrofit conversion device

- Design Concept: Convert single-flush toilets to dual-flush toilets
- BUT - Many mfrs (>12) with products of questionable performance & safety
- Result: 2009 - Koeller and Veritec issued serious CAUTION STATEMENT!!!
 - Retrofit devices...
 - May increase full flush volume
 - May negatively affect toilet performance
 - May reduce trap seal



#2 - After-market dual-flush retrofit conversion device

PROBLEM: No accepted performance “standard” for such after-market devices

- Koeller and Veritec offer manufacturers participation in 3rd-party testing to address issues (manufacturers pay for testing)
- Manufacturers informed that all test results would be published – good or poor
 - ✓ Maximum flush volumes
 - ✓ Independently adjustable full and reduced flush volumes
 - ✓ Ease of installation (need to remove tank?)
 - ✓ Ease of adjustment
 - ✓ Quality of kit, expected water savings



#2 - After-market dual-flush retrofit conversion device

- Manufacturer response to 3rd-party testing-
 - Many initially show initial interest
 - Only 2 submit products for testing
 - Only 1 (so far) meets minimum requirements
- Large potential savings –
 - Remaining devices at risk (water use, perf., safety)
 - **CAUTION STATEMENT** remains!

All such products must be 3rd-party tested to a recognized protocol!!!

#2 - After-market dual-flush retrofit conversion device





#2 - After-market dual-flush retrofit conversion device

...for U.S.-Canada

✓ Total potential annual potable water savings -

**300+ billion gallons or
1+ trillion litres**



TOP PRODUCT #1

0.8gal/3.0L Residential Toilet

- ✓ Canadian development...2009
 - “Proficiency” in Canada *and*
 - “Stealth” in U.S.
- ✓ Field testing
 - Successfully completed in Ontario
 - Underway in Southern California
- ✓ Drainline transport addressed in 2005
- ✓ Single flush - NO “behavioral” element!!



TOP PRODUCT #1

0.8gal/3.0L Residential Toilet

...for U.S.-Canada

✓ Total potential annual potable water savings -

**1 trillion gallons or
4 trillion litres**



Wrapping up...

	Total Potential Annual Water Savings		Capturable Annual Water Savings			Relative Degree of Difficulty & Cost to Implement	Behavioral Change Required?
	(billions of gals)	(Billions of litres)	% Likely Capture*	(billions of gals)	(Billions of litres)		
#1 - 3L Toilets for Residential	1,038	3,929	20%	208	786	Low	None
#2 - Dual-Flush Conversion Device	309	1,168	20%	62	234	Low	Slight
#3 - Hot Water Demand System	258	976	10%	26	98	Medium	Slight
#4 - Waterless Woks	37	141	10%	4	14	High	Maybe
#5 - High-Efficiency Comm'l Dishwashers	21	81	5%	1	4	High	None

***-without financial incentives**



Thank you...

Contact...

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