



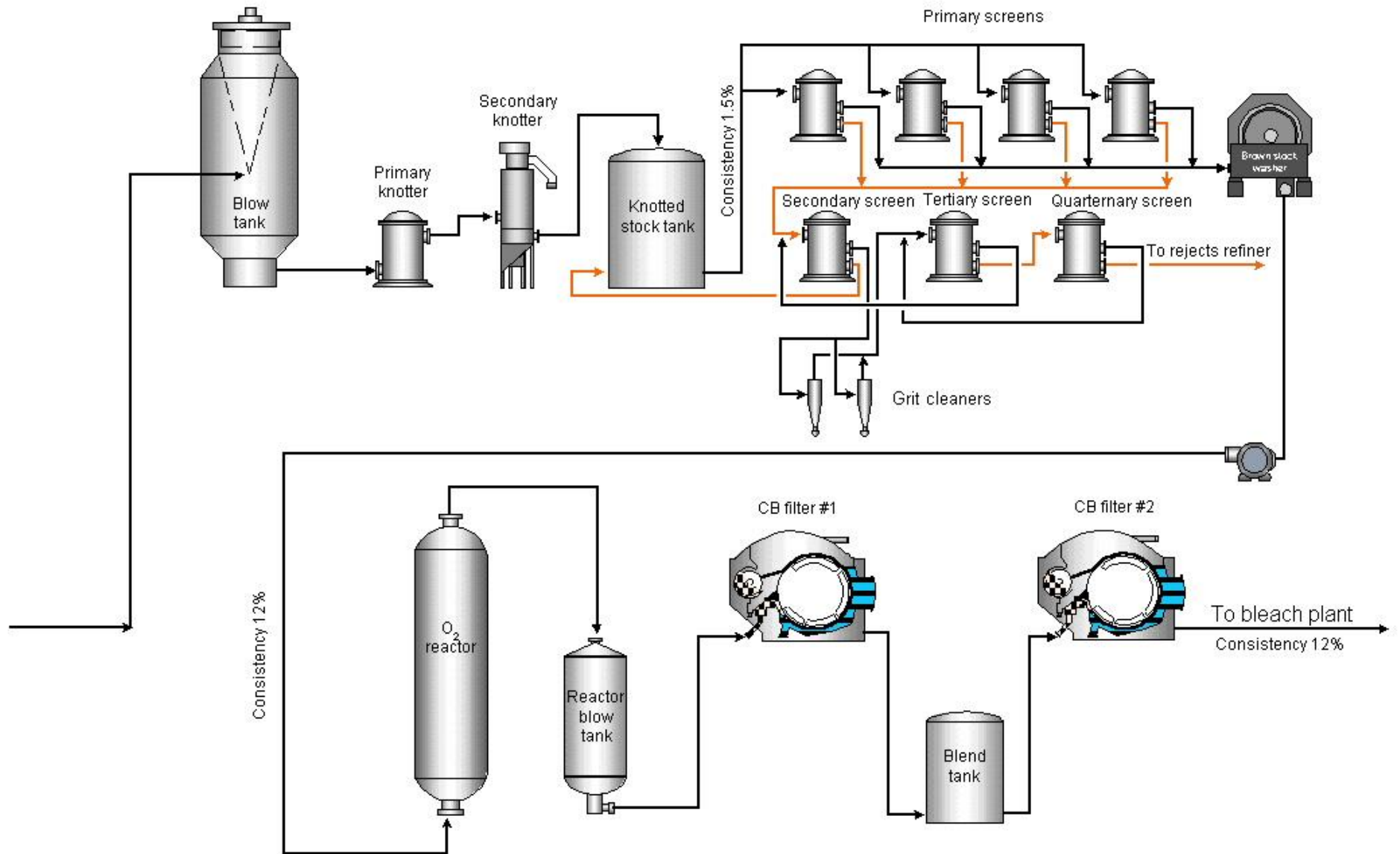
SKOOKUMCHUCK
PULP INC.
A PAPER EXCELLENCE COMPANY

Shocking Do and D1 Costs from Poor Washing

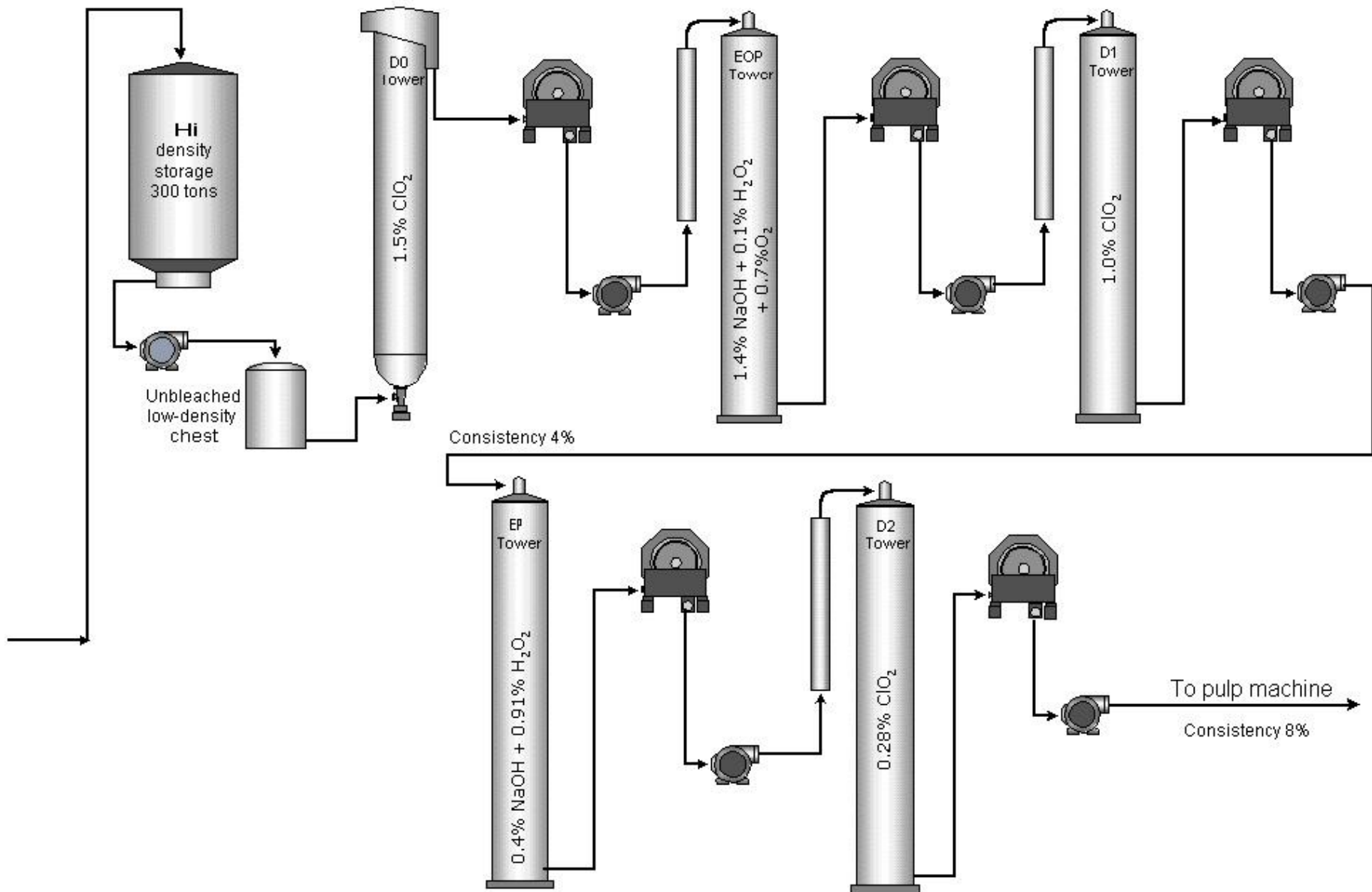
(A Dirty Story)

Mark Cameron

Screening Washing Oxygen Delignification



Bleaching System



Some Good Things

- ▶ Do Kappa Factor 0.22 (good control)
- ▶ Eop Caustic 11 Kg/ADMT
- ▶ Eop Caustic/Do ratio ~1.0
- ▶ Peroxide 2.8 Kg/ADMT
- ▶ Total ClO₂ <20 Kg/ADMT
- ▶ Total Bleaching Cost about \$43-44/ADMT



Some Not So Good Things

- ▶ Kappa into Bleach Plant only 12.3 (O2 delig 45% efficiency).
 - ▶ Post-Eop Kappa is higher than it should be.
 - ▶ ClO₂/Kappa is only "average".
- ▶ How Come??



Procedure for Washer Filtrate Kappa Measurement

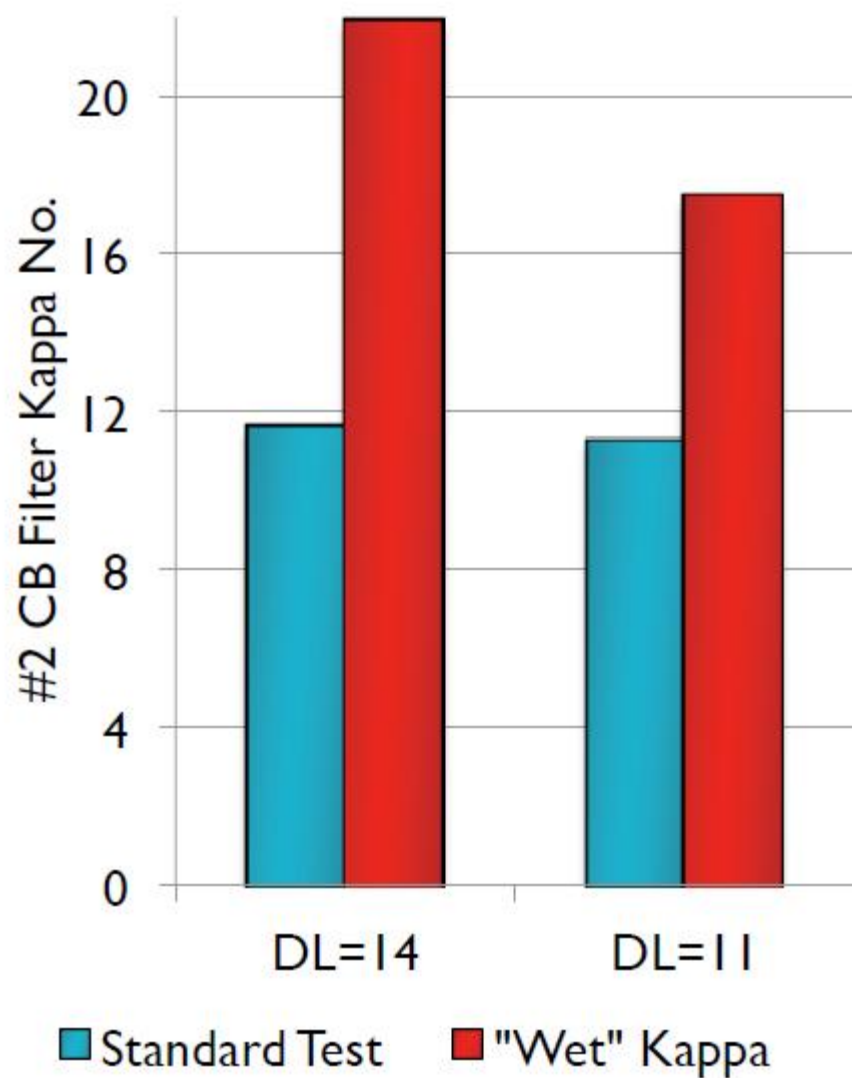
- 1) Collect representative sample of washed stock from doctor board side, with wooden paddle, being very careful not to contact the repulper, or catch the paddle on the rotating drum.
- 2) Remove a plug of pulp from the sample representing both top and bottom of the sheet equally, and squeeze filtrate from the sample into a sample bottle. Good practice is to collect several samples across the sheet, and combine the filtrate into one sample, or best practice is to test the sheet at several points and look for variability in washing.
- 3) Perform a standard “K number” test using 40 mls of permanganate, and 80 mls of the squeezed filtrate instead of pulp, as a starting point. Volume of filtrate used can be adjusted for a second test, to consume approximately half of the permanganate.
- 4) Calculate filtrate Kappa as: (for 80 ml sample)

(Blank (or 40.0) – titration)/10.96 = filtrate Kappa equivalent to 1.0 g pulp

Explanation: assume 12% washer discharge, so the filtrate associated with 1.0 g of pulp (standard Kappa) = $(1 - \text{consist}/100)/(\text{cons}/100)$, which is 7.3 g at 12% consistency. $80 \text{ g filtrate}/7.3 \text{ g filtrate per g pulp} = 10.96$



Pre-Bleach Washing

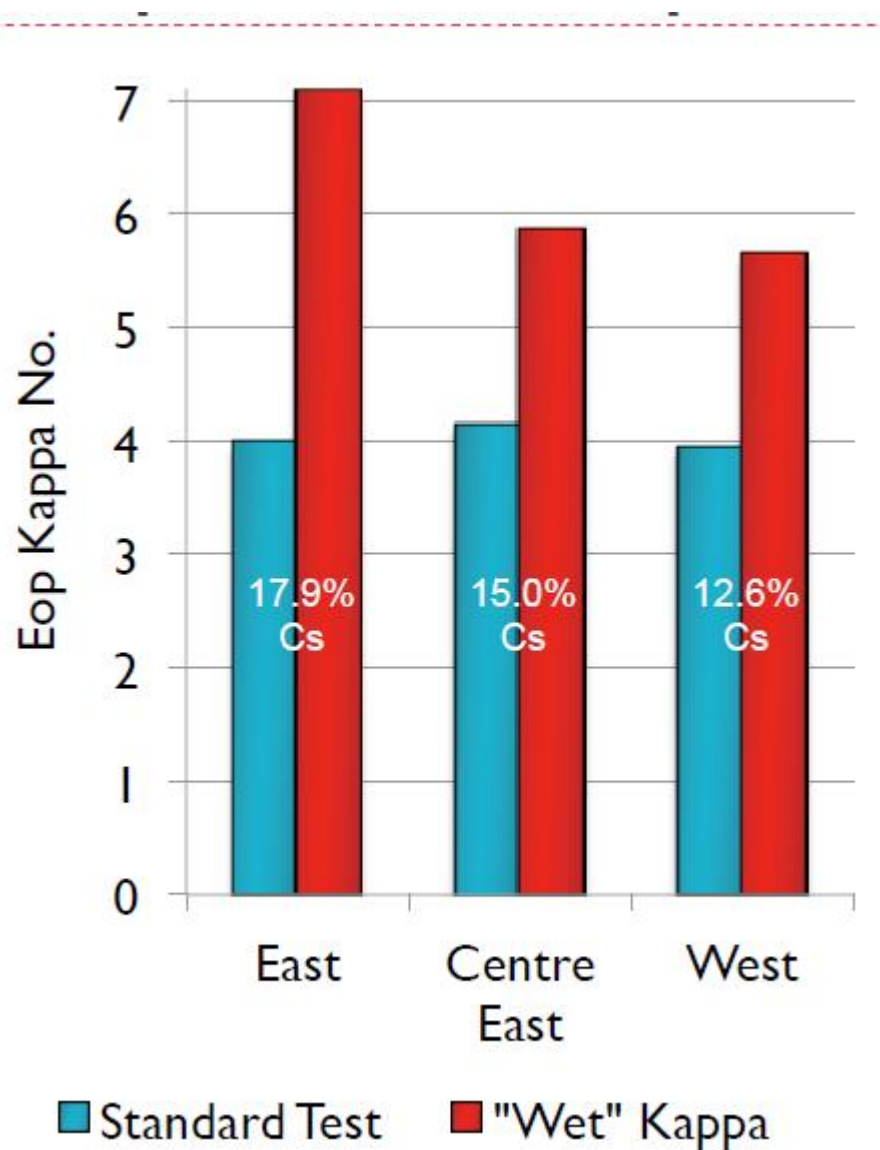


Pre-Bleaching Washing Costs

- ▶ COD tests 14-18 kg/ADMT from post-O2
- ▶ Reduction to <10 kg/ADMT COD would:
 - Save ~2kg/ADMT ClO₂ in D0 and D1 stages
 - Savings estimate ~\$1MM per year



Impact of Eop Washing on D1 ClO2

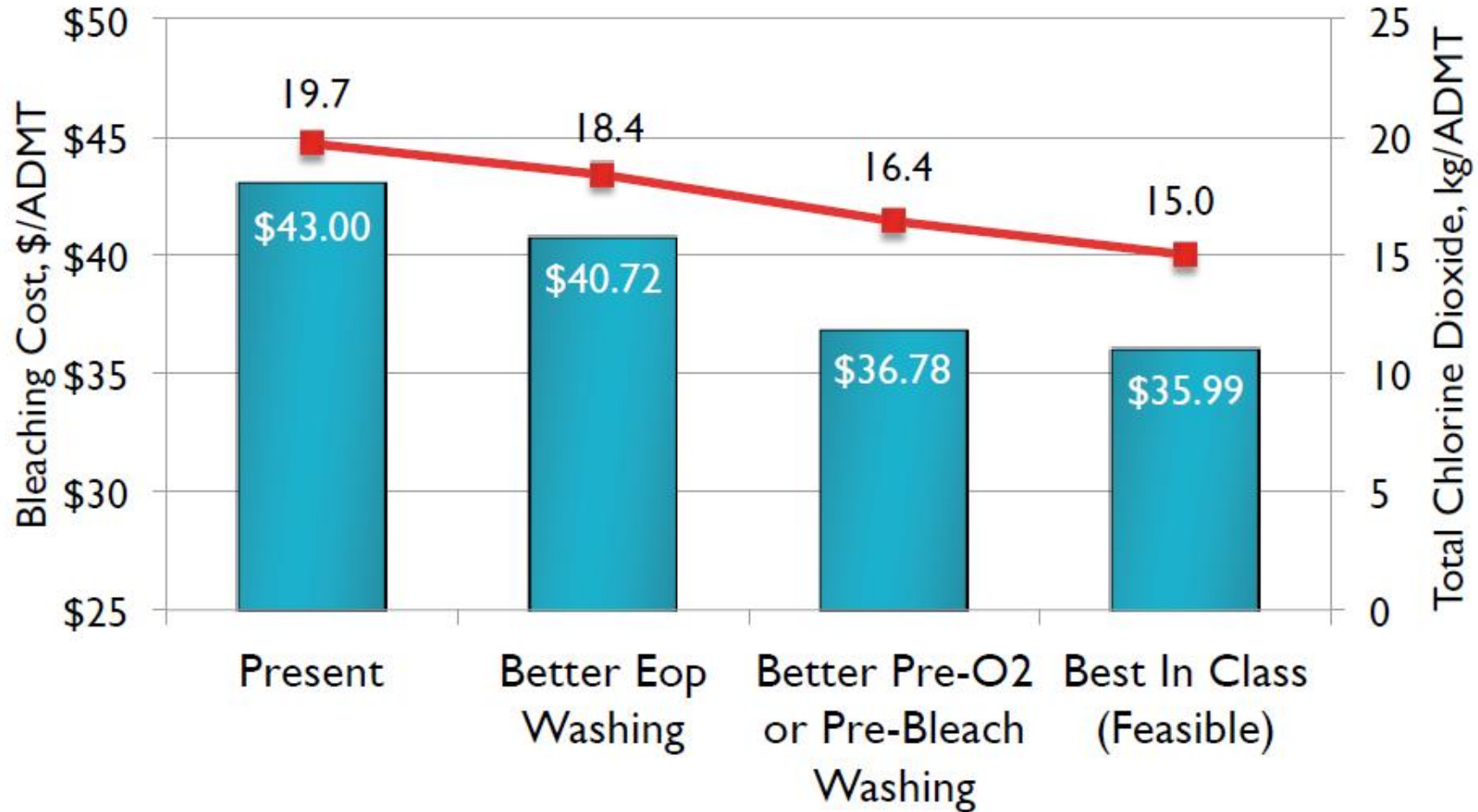


Pre-D1 Washing Costs

- ▶ 30% or more of D1 ClO₂ consumed by washer carryover!!!
- ▶ Improved pre-D1 washing would save 1.5kg/ADMT ClO₂ year.
- ▶ Cost saving of \$0.75 MM per year.....
 - Just by keeping the shower clean



Potential Cost Reduction



Lessons?

- ▶ Most cost reductions take some capital, but.....
- ▶ Some are right under our noses.
 - ▶ Know thine enemy.
 - ▶ Be not slothful.



Thank you

▶ Questions??

▶ (or catcalls?)

