**Notes on code added for CVC wheeling (most made by Nazrul, some additional changes by Tom).**

1. New files and includes added to main.wresl:

Cycle 1:

INCLUDE[LOCAL] 'Wheeling\wheelzero.wresl'

Cycle 2:

INCLUDE[LOCAL] 'Wheeling\wheelcap.wresl'

INCLUDE[LOCAL] 'Wheeling\wheelfixes.wresl'

INCLUDE[LOCAL] 'Wheeling\cycle\_output.wresl'

1. In cvp\_bound\_del\_south.wresl

Commented out this line:

!goal zero\_D855 {D855 = 0.}

And changed comment to explain why this was done (not needed when implementing CVC wheeling):

1. In cvp\_to\_swp\_south.wresl

Removed D\_CVP\_CVC from goal Cross\_Val, and added comment to explain this goal.

1. Addition to weights table:

[C\_Delta\_whlcv,-2000],

1. Tom also added this line to Nazrul's file wheelcap.wresl:

goal wheeling1a {D\_Spring\_whlcv < C\_Kswck\_whlcv}

A similar goal was in Calsim, without this D\_Spring\_whlcv often gets all the flow in D\_Spring.

1. In BanksSplit.wresl, Nazrul had activated a lot of commented out lines relevant to wheeling. Tom re-commented out some of these that were related to wheeling other than CVC, but left active lines related to CVC wheeling only.
2. Made the following changes to coa.wresl:

* Added Surp1Terms and Surp2Terms to the following COA balances. This replicates what is in Calsim.

COA\_balance gets both on right side.

COA\_CVP gets Surp1Terms on left side.

COA\_SWP gets Surp2Terms on left side.

* Added \_m to a number of terms in the goals below, so CVC wheeling water isn’t included in storage changes. This replicates what is in Calsim.

goal shasta\_storage\_change {SHADS = C\_Kswck\_m - I\_Shsta - D\_Spring\_m}

goal folsom\_storage\_change {FOLDS = C\_Nimbus\_m + D\_Nimbus + D\_Folsm - I\_Folsm}

goal whiskey\_storage\_change {WHSSW - WHSSI = C\_Wkytn\_m + D\_Spring\_m - I\_Wkytn}

* Fixed second term on right side of the goal COA\_Balance (was C\_Delta\_CVP, which duplicated the previous term, should be C\_Delta\_SWP).
* Added C\_Delta\_whlcv to the goal below. This replicates what is in Calsim.

goal SrpArcSplit {C\_Delta = C\_Delta\_CVP + C\_Delta\_SWP + C\_Delta\_ANN + C\_Delta\_whlcv}

**Other needed fixes that were made that don't specifically affect CVC wheeling:**

1. Deleted these lines in Delivery-table.wresl:

goal zero\_D\_RedBlfP {D\_RedBlf\_P = 0.}

goal zero\_D\_WilknsP {D\_Wilkns\_P = 0.}

goal zero\_D\_SacAmeP {D\_SacAme\_P = 0.}

goal zero\_D\_FolsmP {D\_Folsm\_P = 0.}

goal zero\_D\_NimbusP {D\_Nimbus\_P = 0.}

goal zero\_D\_Napa {D\_Napa = 0.}

goal zero\_D\_Solano {D\_Solano = 0.}

goal zero\_D\_FVB {D\_FVB = 0.}

1. Added these weights for CVP SOD deliveries, which were omitted from earlier code by mistake. Losses are 1285 and rest are 1265.

[D607A,1265],

[D607B,1265],

[D607C,1265],

[D607D,1285],

[D608B,1265],

[D608C,1265],

[D700,1265],

[D833,1265],

[D835,1265],

[D\_CVPJU\_LDMC\_P,1265], (for Calsim deliveries D706-708, weights for D706 and D707 had been omitted)

1. Added these weights, were omitted by mistake and are necessary for COA.

[UNUSED\_FS,-1285],

[UNUSED\_SS,-1285],

1. Made the following changes in COA.wresl:

* In goal swp\_storage change, removed term AD\_Therm and added new variable I\_KellyRidge (this is the same as I200 in Calsim).
* In goal folsom\_storage\_change, added term I\_Nimbus, which is the same as I9 in Calsim.

1. Added definitions of I\_Nimbus and I\_KellyRidge to Inflow-table.wresl.
2. In assumptions.wresl, commented out this line:

!define int\_IBU\_UWFE {value 1.0}

**Changes in CS2CL model:**

Added code to create new timeseries I\_KellyRidge and I\_Nimbus, which are copies of I200 and I9.