Start of Hydroelectric project

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1 Variables

$$x_{ct} = LpVariable("TurbinedVolume", minFlow_{ct}, maxFlow_{ct}, cat = "Float")$$

$$y_{ct} = LpVariable("DischargedVolume", minWeir_{ct}, maxWeir_{ct}, cat = "Float")$$

$$v_{ct} = LpVariable("TankVolume", cat = "Float")$$

$$nb_{ctn} = LpVariable("ActiveTurbines", cat = "Binary")$$

2 Objective Function

$$maximize \sum_{p=1}^{3} \sum_{c=1}^{2} p_{cp}$$

prob = LpProblem("Hydroelectric Problem", LpMaximize)

prob += lpSum(lpSum((pcp) for c in range (1, 2)) for p in range (1, 30)), "Objective function"

3 Constrains

$$prob+ = P_{ct} <= 2x_{cn}$$

, "Power produced for each plant"

$$prob+ = v_{c1t+1} = ANC_{c1t} + v_{c1t} - x_{c1t} - y_{c1t}$$

, "Tank volume of the first plant"

prob += lpSum(NBctn for n in range (1, 3)) = 1

, "Single active turbine combination"

$$prob+ = v_{ct1} = InitialVolume_c$$

, "Initial volume in each tank"

$$prob+ = v_{ct30} = FinalVolume_c$$

, "Final volume in each tank"