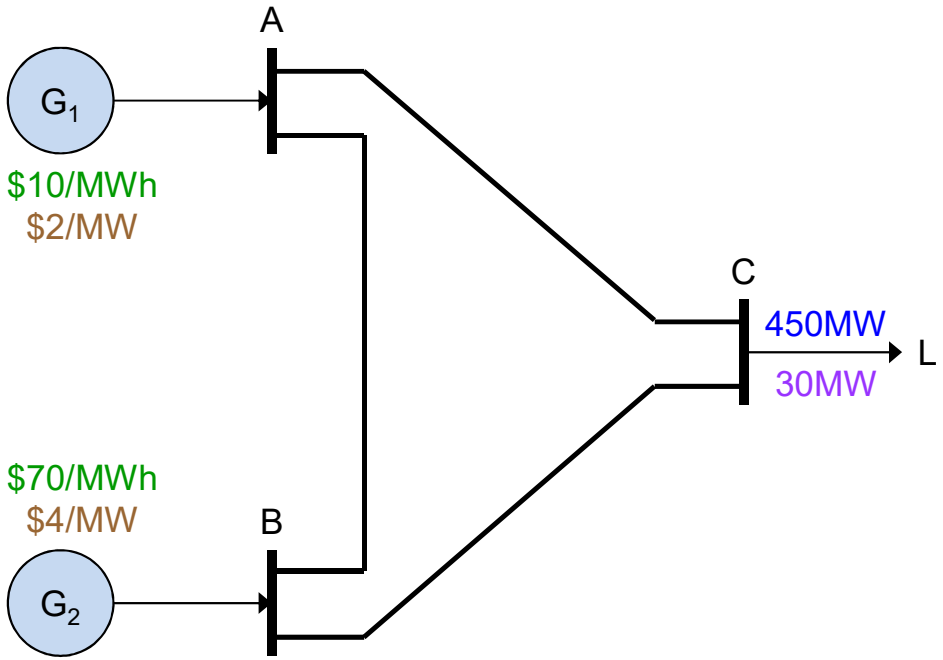
California ISO

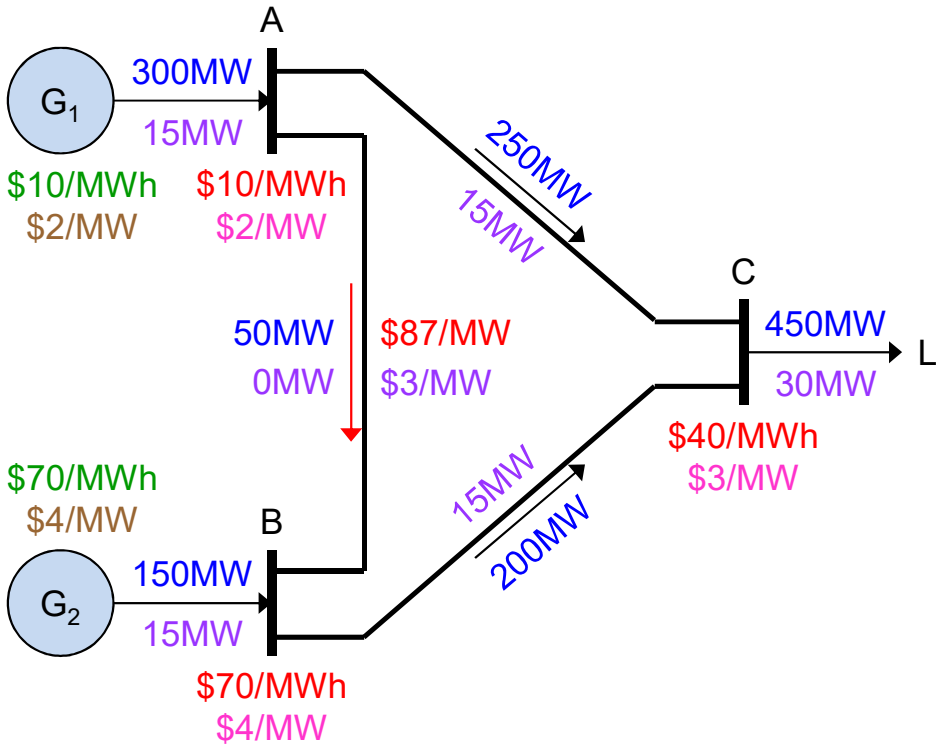
DAME Appendix C:
Local Market Power Mitigation Examples

Local Market Power Mitigation in IFM
Example 1: Setup



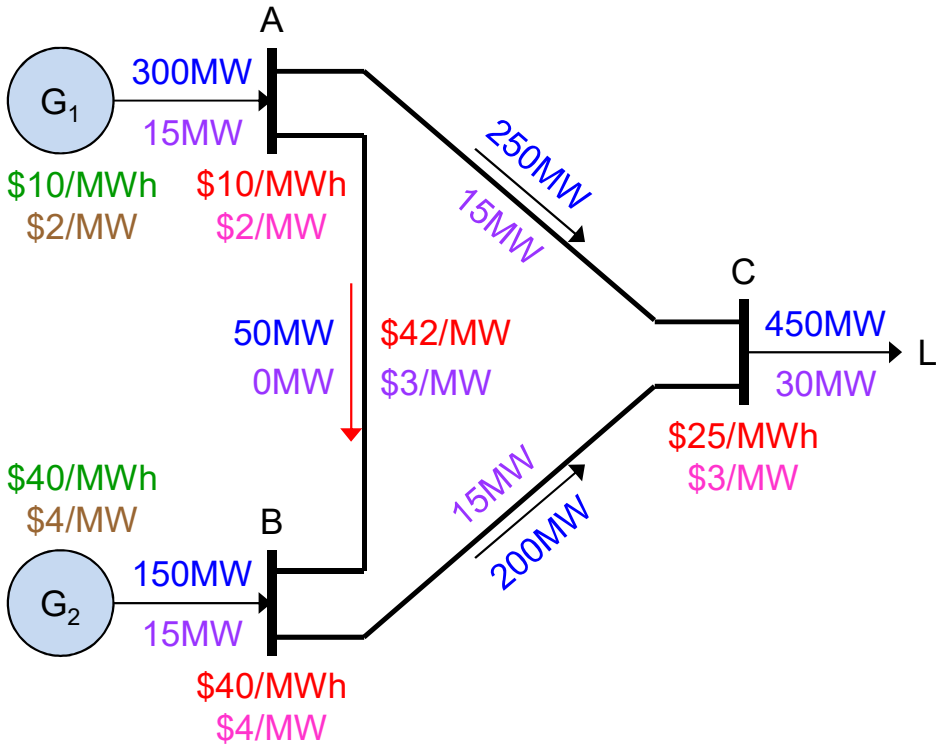
- G_1
  - Energy bid: $10/MWh
  - IRU bid: $2/MW
- G_2
  - Energy bid: $70/MWh
  - DEB: $40/MWh
  - IRU bid: $4/MW
- L
  - Energy self-schedule: 450MW
  - IRU requirement: 30MW
- Line A-B power flow limit: 50MW

Local Market Power Mitigation in IFM
Example 1: MPM Base and IRU Deployment Scenario



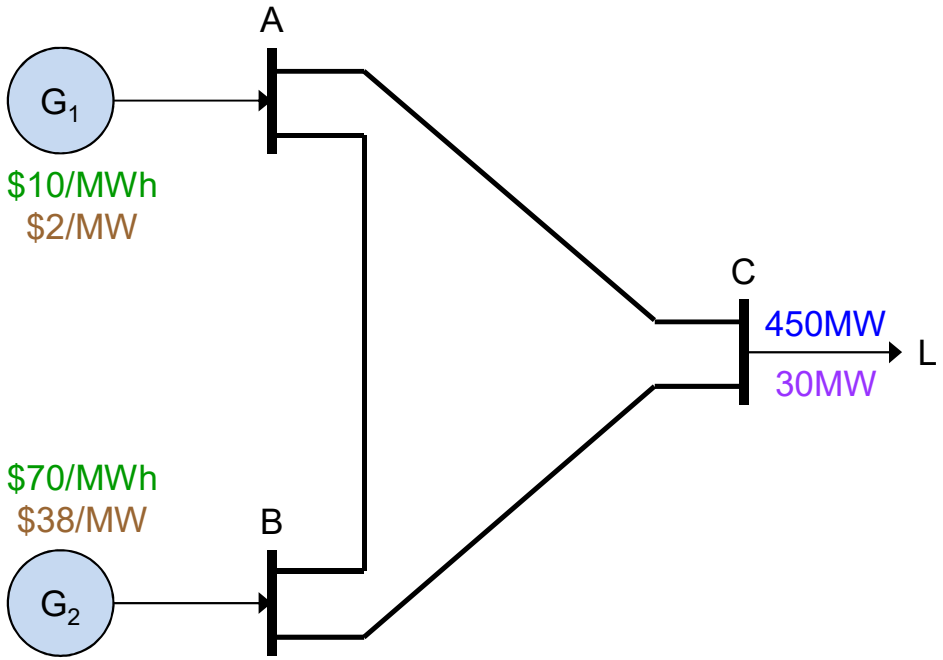
- G_1
  - Schedule: 300MW; IRU award: 15MW
- G_2
  - Schedule: 150MW; IRU award: 15MW
- Line A-B power flow at limit: 50MW
  - Shadow prices: $87/MWh, $3/MW
- LMPs
  - A: Energy: $10/MWh; IRU: $2/MW
  - B: Energy: $70/MWh; IRU: $4/MW
  - C: Energy: $40/MWh; IRU: $3/MW

Local Market Power Mitigation in IFM
Example 1: IFM Base and IRU Deployment Scenario



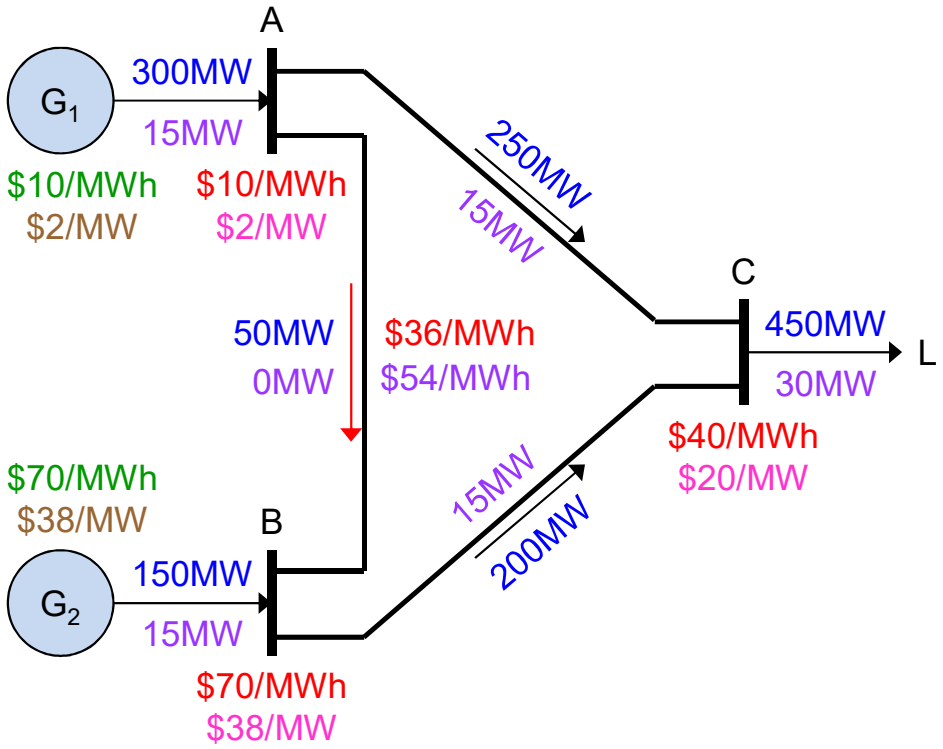
- G_1
  - Schedule: 300MW; IRU award: 15MW
- G_2
  - Schedule: 150MW; IRU award: 15MW
  - Energy bid is mitigated to the higher of DEB or competitive LMP ($40/MWh)
- Line A-B power flow at limit: 50MW
  - Shadow prices: $42/MW, $3/MWh
- LMPs
  - A: Energy: $10/MWh; IRU: $2/MW
  - B: Energy: $40/MWh; IRU: $4/MW
  - C: Energy: $25/MWh; IRU: $3/MW
- IRU cost allocated to L: $90

Local Market Power Mitigation in IFM
Example 2: Can G_2 exercise market power in IRU?



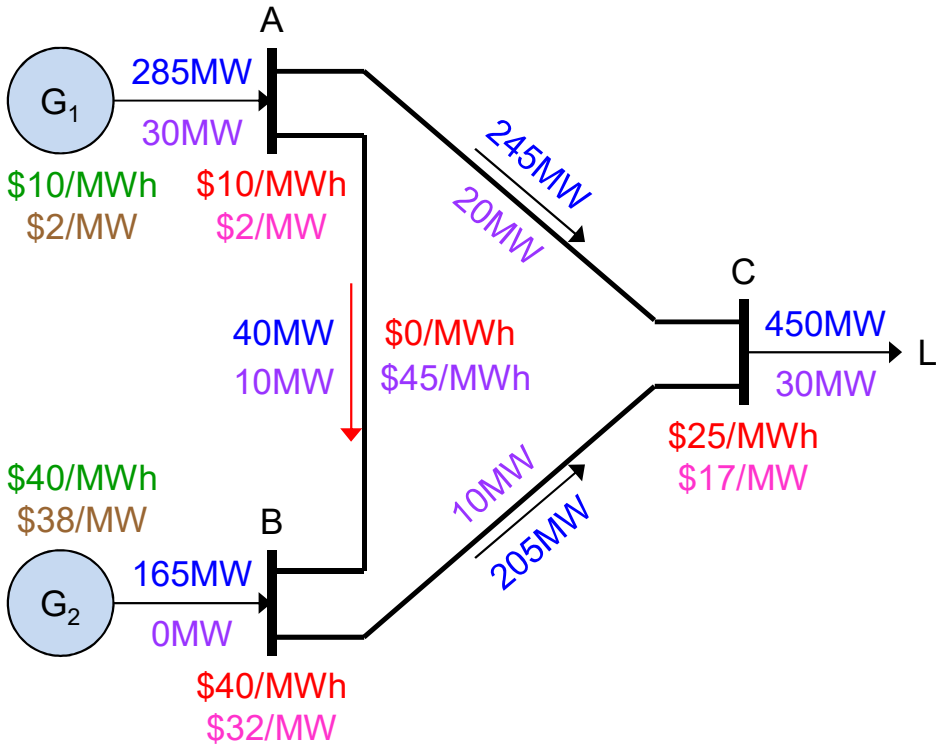
- G_1
  - Energy bid: $10/MWh
  - IRU bid: $2/MW
- G_2
  - Energy bid: $70/MWh
  - DEB: $40/MWh
  - IRU bid: $38/MW
- L
  - Energy self-schedule: 450MW
  - IRU requirement: 30MW
- Line A-B power flow limit: 50MW

Local Market Power Mitigation in IFM
Example 2: MPM Base and IRU Deployment Scenario



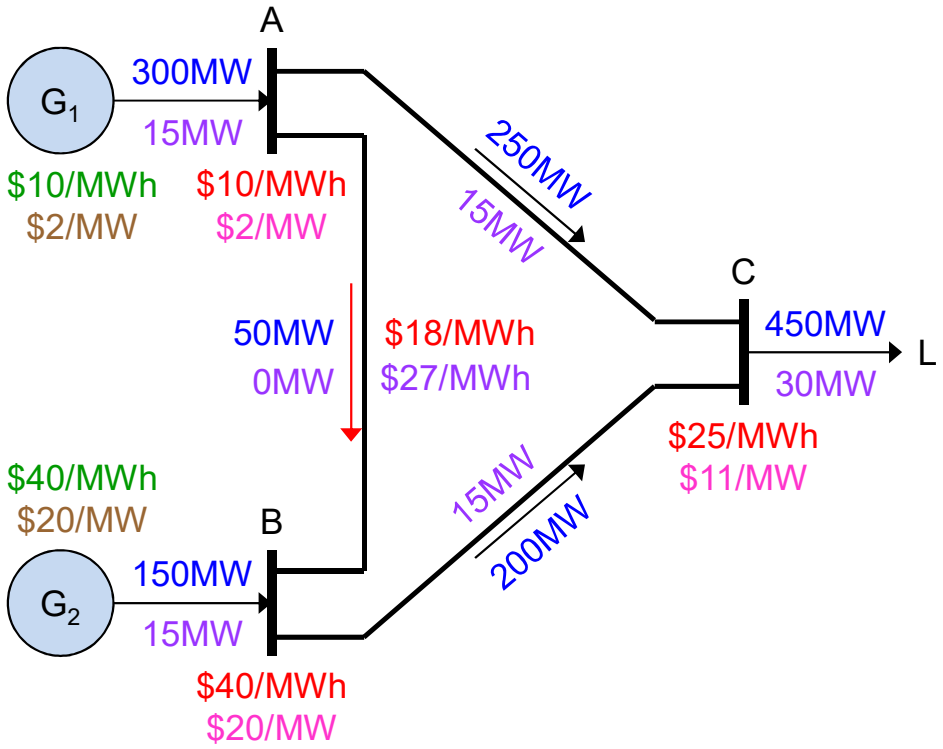
- G_1
  - Schedule: 300MW; IRU award: 15MW
- G_2
  - Schedule: 150MW; IRU award: 15MW
- Line A-B power flow at limit: 50MW
  - Shadow prices: $36/MWh, $54/MWh
- LMPs
  - A: Energy: $10/MWh; IRU: $2/MW
  - B: Energy: $70/MWh; IRU: $38/MW
  - C: Energy: $40/MWh; IRU: $20/MW
- IRU cost allocated to L: $600

Local Market Power Mitigation in IFM
Example 2: IFM Base and IRU Deployment Scenario



- G_1
  - Schedule: 285MW; IRU award: 30MW
- G_2
  - Schedule: 165MW; IRU award: 0MW
  - Energy bid is mitigated to the higher of DEB or competitive LMP ($40/MWh)
- Line A-B at limit: 40MW + 10MW
  - Shadow prices: $0/MWh, $45/MWh
- LMPs
  - A: Energy: $10/MWh; IRU: $2/MW
  - B: Energy: $40/MWh; IRU: $32/MW
  - C: Energy: $25/MWh; IRU: $17/MW
- IRU cost allocated to L: $60

Local Market Power Mitigation in IFM
Example 2: IFM with both Energy and IRU Mitigation



- G_1
  - Schedule: 300MW; IRU award: 15MW
- G_2
  - Schedule: 150MW; IRU award: 15MW
  - Energy bid is mitigated to $40/MWh
  - IRU bid is mitigated to $20/MW
- Line A-B power flow at limit: 50MW
  - Shadow prices: $18/MWh, $27/MWh
- LMPs
  - A: Energy: $10/MWh; IRU: $2/MW
  - B: Energy: $40/MWh; IRU: $20/MW
  - C: Energy: $25/MWh; IRU: $11/MW
- IRU cost allocated to L: $330