

# Summary

December 6, 2024

# Contents

- 0.1 Loaded Graphs . . . . . 2
  - 0.1.1  $g_{\{0\}}$  . . . . . 2
  - 0.1.2  $g_{\{1\}}$  . . . . . 2
  - 0.1.3  $g_{\{2\}}$  . . . . . 2
- 0.2 Product Graphs . . . . . 2
  - 0.2.1  $p_{\{0,56\}}$  . . . . . 2
- 0.3 Enumerated Flows . . . . . 3
  - 0.3.1 Solution 0 . . . . . 3
  - 0.3.2 Solution 1 . . . . . 5
  - 0.3.3 Solution 2 . . . . . 7
  - 0.3.4 Solution 3 . . . . . 9
  - 0.3.5 Solution 4 . . . . . 11
  - 0.3.6 Solution 5 . . . . . 13
  - 0.3.7 Solution 6 . . . . . 15
  - 0.3.8 Solution 7 . . . . . 16
  - 0.3.9 Solution 8 . . . . . 18
  - 0.3.10 Solution 9 . . . . . 20
  - 0.3.11 Solution 10 . . . . . 22
  - 0.3.12 Solution 11 . . . . . 24
  - 0.3.13 Solution 12 . . . . . 26

## 0.1 Loaded Graphs

### 0.1.1 g\_{0}



File: out/001\_g\_0\_10300000



File: out/003\_g\_0\_11310100

### 0.1.2 g\_{1}



File: out/005\_g\_1\_10300000



File: out/007\_g\_1\_11310100

### 0.1.3 g\_{2}



File: out/009\_g\_2\_10300000



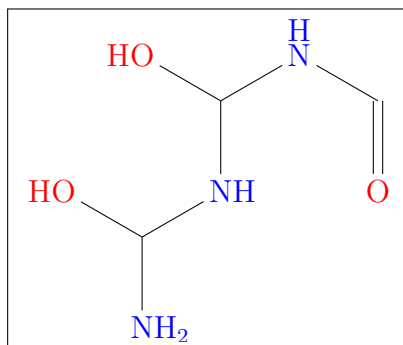
File: out/011\_g\_2\_11310100

## 0.2 Product Graphs

### 0.2.1 p\_{0,56}



File: out/013\_g\_1088\_10300000



File: out/015\_g\_1088\_11310100

## 0.3 Enumerated Flows

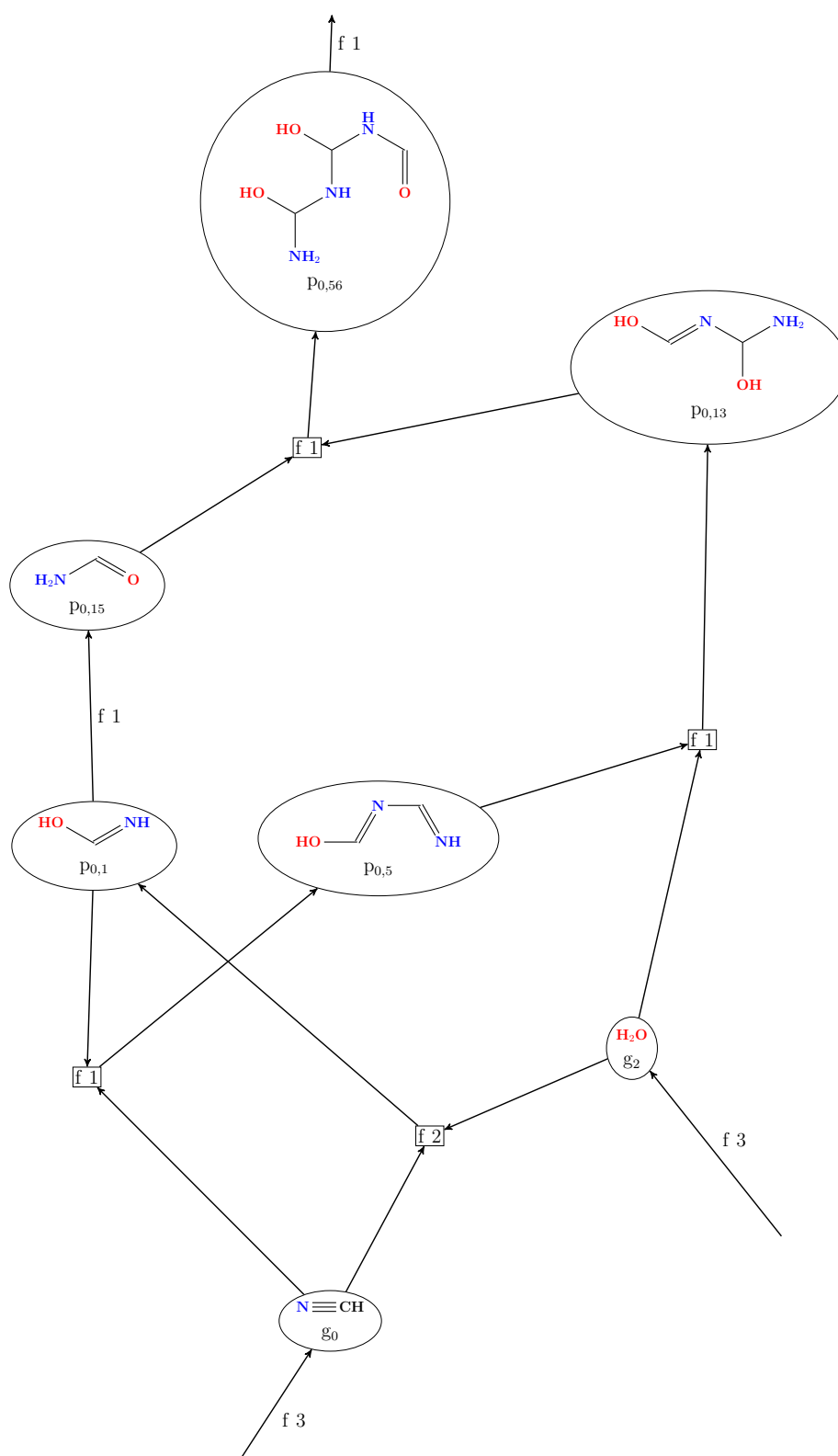
### 0.3.1 Solution 0

#### Overall Data

Objective value (non-integral): -0.116813

Vertex/Graph	In	Out	G	logK	t_order
g_{0}	3	0	-5.507141	1.000000	0
g_{2}	3	0	-5.068033	1.000000	0
p_{0,13}	0	0	-21.240678	0.000000	33
p_{0,15}	0	0	-10.625174	0.000000	33
p_{0,1}	0	0	-10.610101	0.000000	1
p_{0,56}	0	1	-31.869260	1.000000	67
p_{0,5}	0	0	-16.158998	1.000000	32

## Filtered Graph



File: out/029\_dg\_0\_11100\_f\_0\_0\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14458.99666	1.0	-14455.670875	0
$g_2$	3	0	-13306.118349	1.0	-13302.792564	0
$p_{0,1}$	0	0	-27856.817054	0.0	-27856.817054	1
$p_{0,5}$	0	0	-42425.44262	1.0	-42422.116835	32
$p_{0,13}$	0	0	-55767.391129	0.0	-55767.391129	33
$p_{0,15}$	0	0	-27896.389963	0.0	-27896.389963	33
$p_{0,56}$	0	1	-83672.731446	1.0	-83669.405661	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-100.016508	-100.016508
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-109.628906	-109.628906
36	$p_{0,1},$	$p_{0,15},$	1	-39.572909	-39.572909
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-44.144622	-44.144622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-4.793123	-4.793123
Sum					-306.69359056634863

$$\Delta G = -39.817257116150664$$

$$\Delta E = -0.11681341941722437$$

$$|E| = 6$$

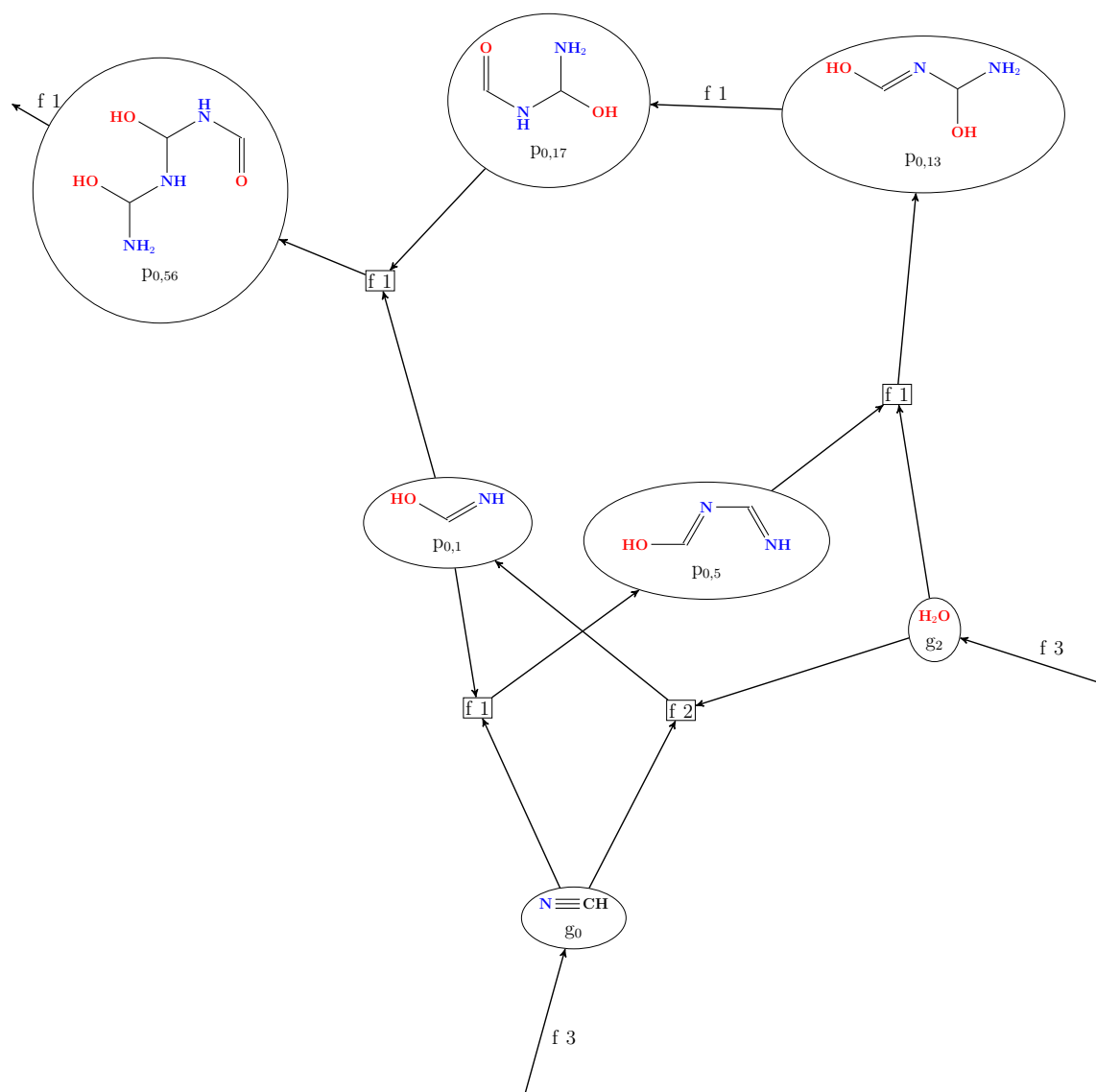
$$|U| = 5$$

### 0.3.2 Solution 1

#### Overall Data

Objective value (non-integral): -0.116813						
Vertex/Graph	In	Out	G	logK	t_order	
$g_{\{0\}}$	3	0	-5.507152	1.000000	0	
$g_{\{2\}}$	3	0	-5.068043	1.000000	0	
$p_{\{0,13\}}$	0	0	-21.240678	0.000000	64	
$p_{\{0,17\}}$	0	0	-21.248887	1.000000	65	
$p_{\{0,1\}}$	0	0	-10.610101	1.000000	1	
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67	
$p_{\{0,5\}}$	0	0	-16.158998	1.000000	2	

## Filtered Graph



File: out/040\_dg\_0\_11100\_f\_0\_1\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	0
$p_{0,1}$	0	0	-27856.817054	1.0	-27853.491269	1
$p_{0,5}$	0	0	-42425.44262	1.0	-42422.116835	2
$p_{0,13}$	0	0	-55767.391129	0.0	-55767.391129	64
$p_{0,17}$	0	0	-55788.944315	1.0	-55785.61853	65
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	2	-95.803747	-95.803747
14	$g_0, p_{0,1},$	$p_{0,5},$	1	-113.75722	-113.75722
123	$g_2, p_{0,5},$	$p_{0,13},$	1	-44.11801	-44.11801
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.451885	-35.451885
250	$p_{0,13},$	$p_{0,17},$	1	-17.395955	-17.395955
Sum	-306.6935905663533				

$$\Delta G = -40.233055656205366$$

$$\Delta E = -0.11681341941722614$$

$$|E| = 6$$

$$|U| = 5$$

### 0.3.3 Solution 2

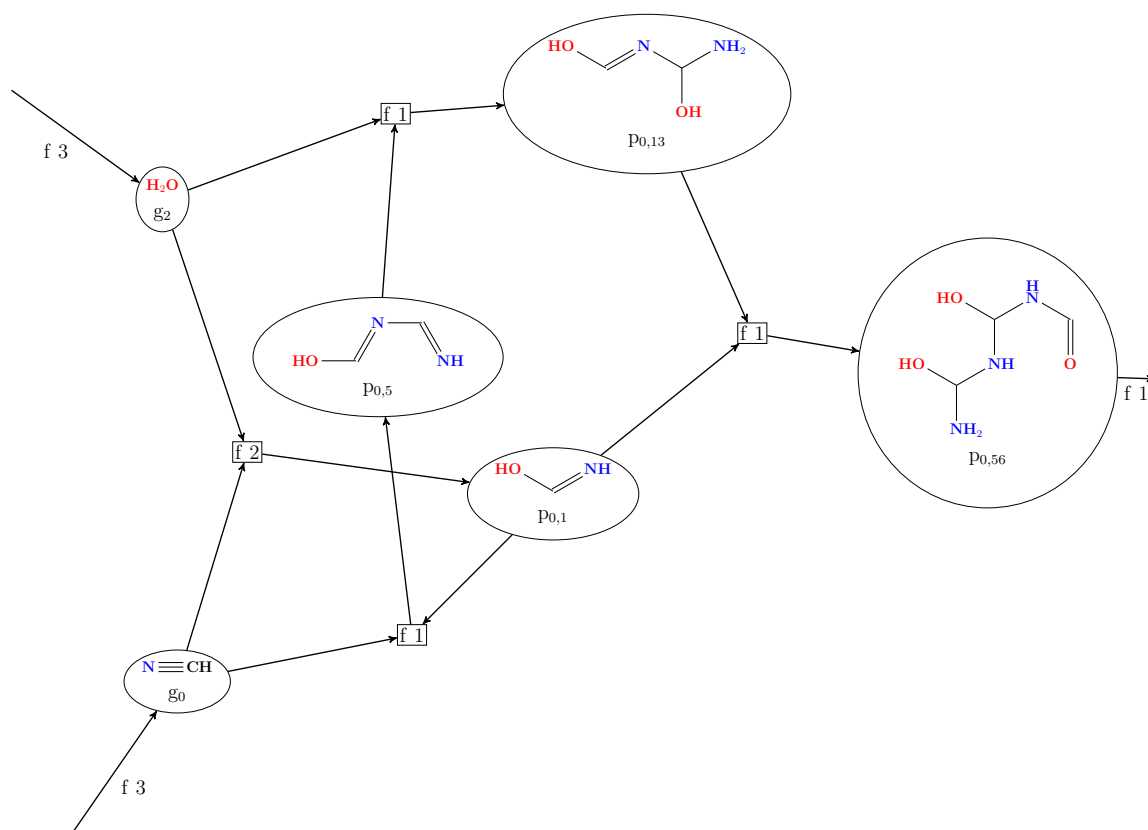
#### Overall Data

Objective value (non-integral): -0.116813

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	1.000000	16
$p_{\{0,13\}}$	0	0	-21.240678	0.000000	49
$p_{\{0,1\}}$	0	0	-10.610101	1.000000	17
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67
$p_{\{0,5\}}$	0	0	-16.158998	1.000000	32



## Filtered Graph



File: out/049\_dg\_0\_11100\_f\_0\_2\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	16
$p_{0,1}$	0	0	-27856.817054	1.0	-27853.491269	17
$p_{0,5}$	0	0	-42425.44262	1.0	-42422.116835	32
$p_{0,13}$	0	0	-55767.391129	0.0	-55767.391129	49
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2$	$p_{0,1}$	2	-95.803747	-95.803747
14	$g_0, p_{0,1}$	$p_{0,5}$	1	-113.75722	-113.75722
123	$g_2, p_{0,5}$	$p_{0,13}$	1	-44.11801	-44.11801
263	$p_{0,1}, p_{0,13}$	$p_{0,56}$	1	-52.84784	-52.84784
Sum					-306.6935905663533

$$\Delta G = -40.233055918755326$$

$$\Delta E = -0.11681341941722614$$

$$|E| = 5$$

$$|U| = 4$$

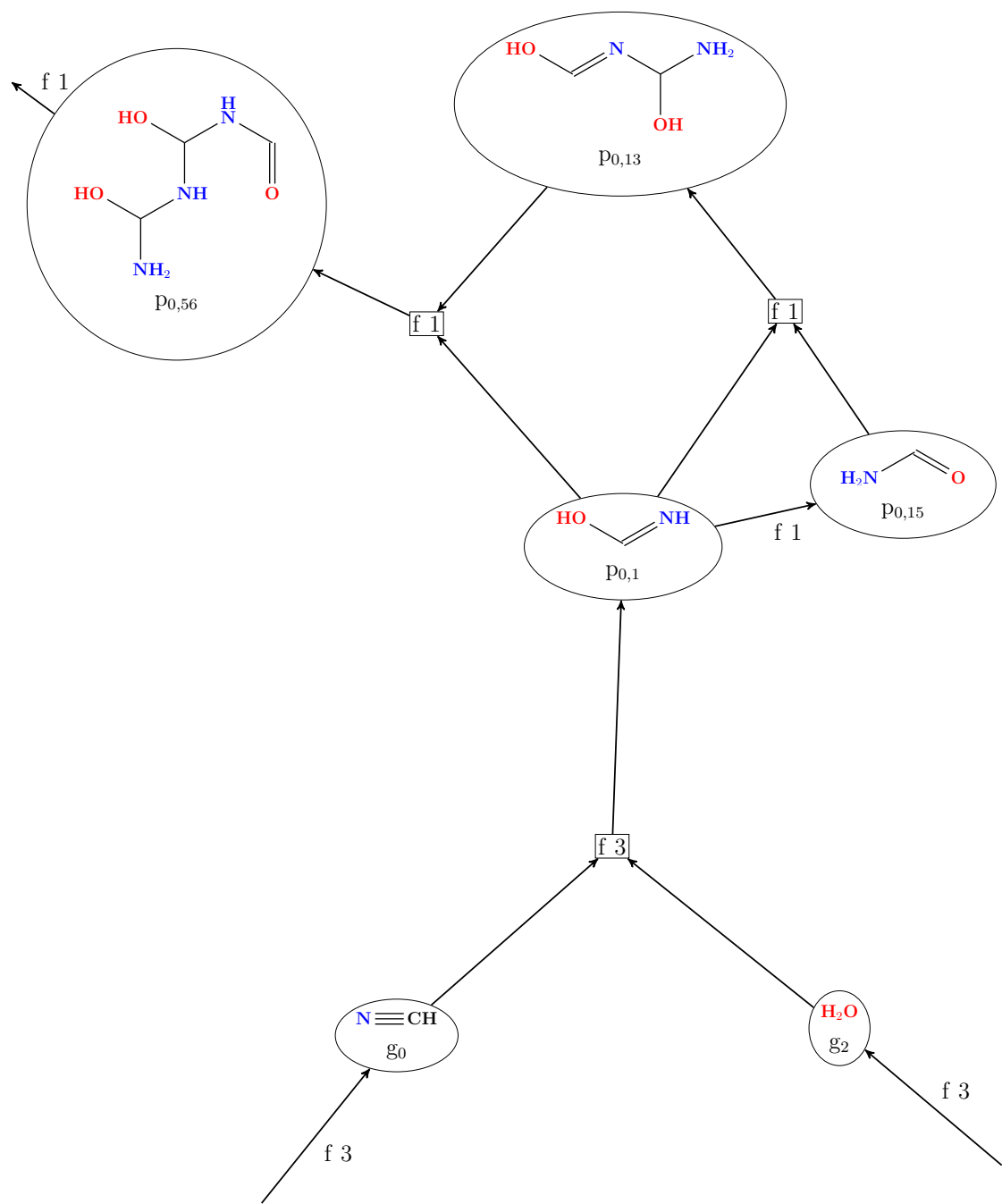
### 0.3.4 Solution 3

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
g_{0}	3	0	-5.507152	1.000000	0
g_{2}	3	0	-5.068043	1.000000	0
p_{0,13}	0	0	-21.240678	1.000000	50
p_{0,15}	0	0	-10.625174	0.000000	33
p_{0,1}	0	0	-10.610101	0.000000	16
p_{0,56}	0	1	-31.869260	1.000000	67

Filtered Graph



File: out/058\_dg\_0\_11100\_f\_0\_3\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	0
$p_{0,1}$	0	0	-27856.817054	0.0	-27856.817054	16
$p_{0,13}$	0	0	-55767.391129	1.0	-55764.065344	50
$p_{0,15}$	0	0	-27896.389963	0.0	-27896.389963	33
$p_{0,56}$	0	1	-83672.731446	1.0	-83669.405661	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-99.960978	-99.960978
36	$p_{0,1},$	$p_{0,15},$	1	-39.572909	-39.572909
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-10.02688	-10.02688
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-48.523263	-48.523263
Sum					-210.89002701006757

$$\Delta G = -39.800597533288276$$

$$\Delta E = -0.08032376917478302$$

$$|E| = 6$$

$$|U| = 4$$

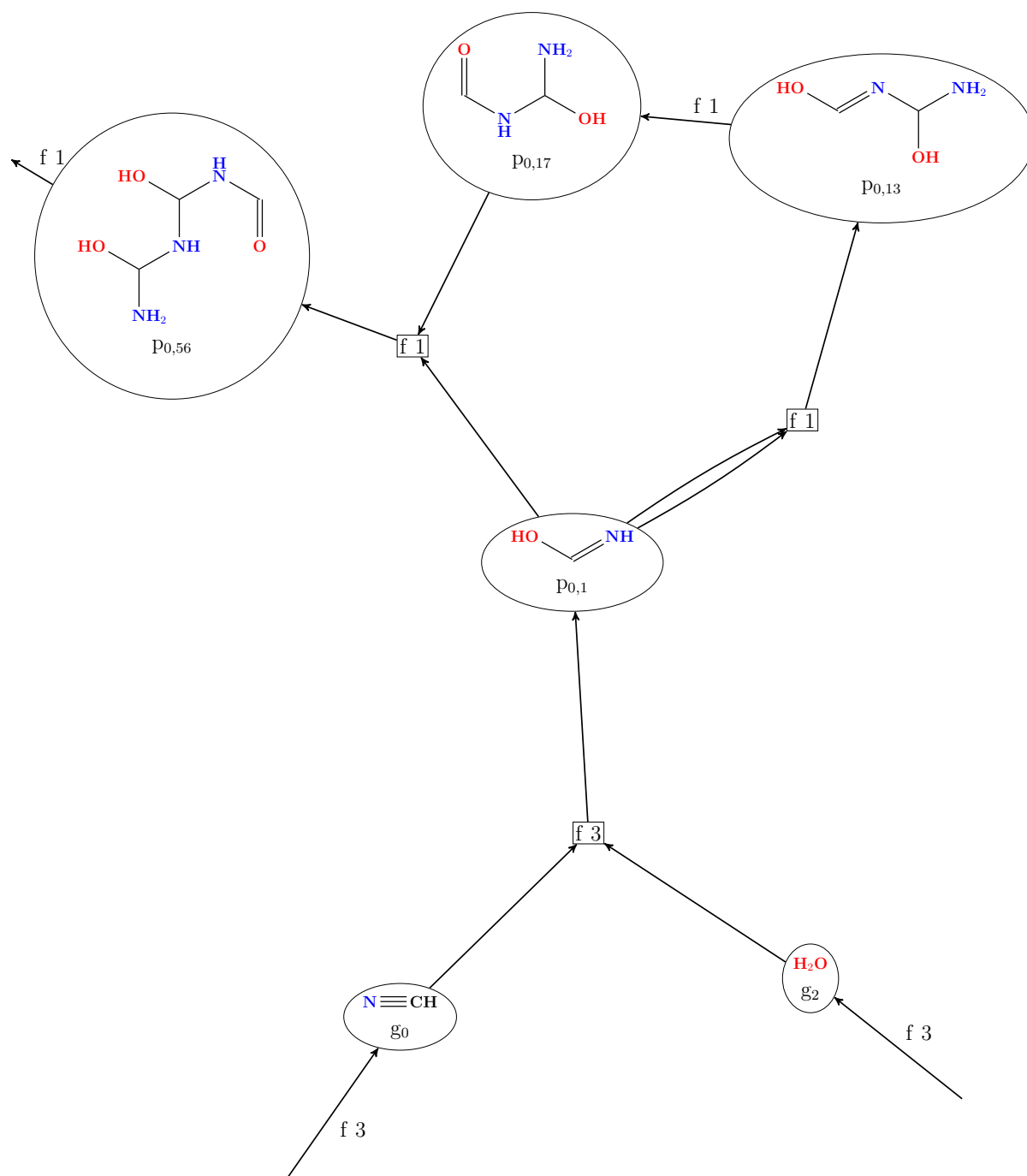
### 0.3.5 Solution 4

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	0.000000	0
$g_{\{2\}}$	3	0	-5.068043	0.000000	0
$p_{\{0,13\}}$	0	0	-21.240635	1.000000	44
$p_{\{0,17\}}$	0	0	-21.248844	1.000000	45
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	21
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/067\_dg\_0\_11100\_f\_0\_4\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	0.0	-14459.025578	0
$g_2$	3	0	-13306.144961	0.0	-13306.144961	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	21
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	44
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	45
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-87.433571	-87.433571
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-57.914144	-57.914144
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.619177	-35.619177
250	$p_{0,13},$	$p_{0,17},$	1	-21.553143	-21.553143
Sum					-210.89002701006757

$$\Delta G = -37.73871678946505$$

$$\Delta E = -0.08032376917478302$$

$$|E| = 6$$

$$|U| = 4$$

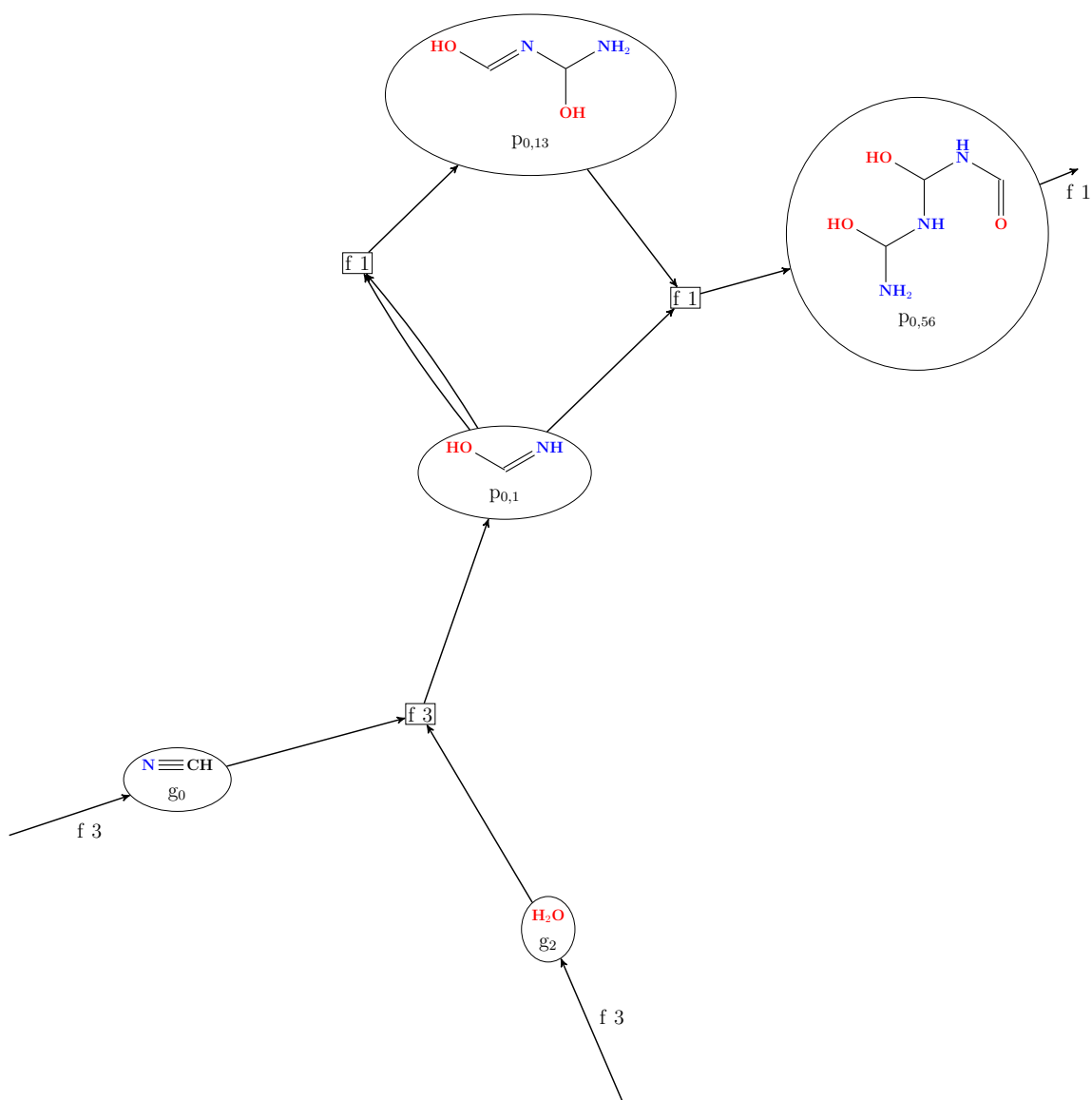
### 0.3.6 Solution 5

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	0.000000	0
$g_{\{2\}}$	3	0	-5.068043	0.000000	0
$p_{\{0,13\}}$	0	0	-21.240635	1.000000	65
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	1
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/076\_dg\_0\_11100\_f\_0\_5\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	0.0	-14459.025578	0
$g_2$	3	0	-13306.144961	0.0	-13306.144961	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	65
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-87.433571	-87.433571
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-57.914144	-57.914144
263	$p_{0,1}, p_{0,13},$	$p_{0,56},$	1	-57.17232	-57.17232
Sum					-210.89002701006757

$$\Delta G = -37.73871705201501$$

$$\Delta E = -0.08032376917478302$$

$|E| = 5$   
 $|U| = 3$

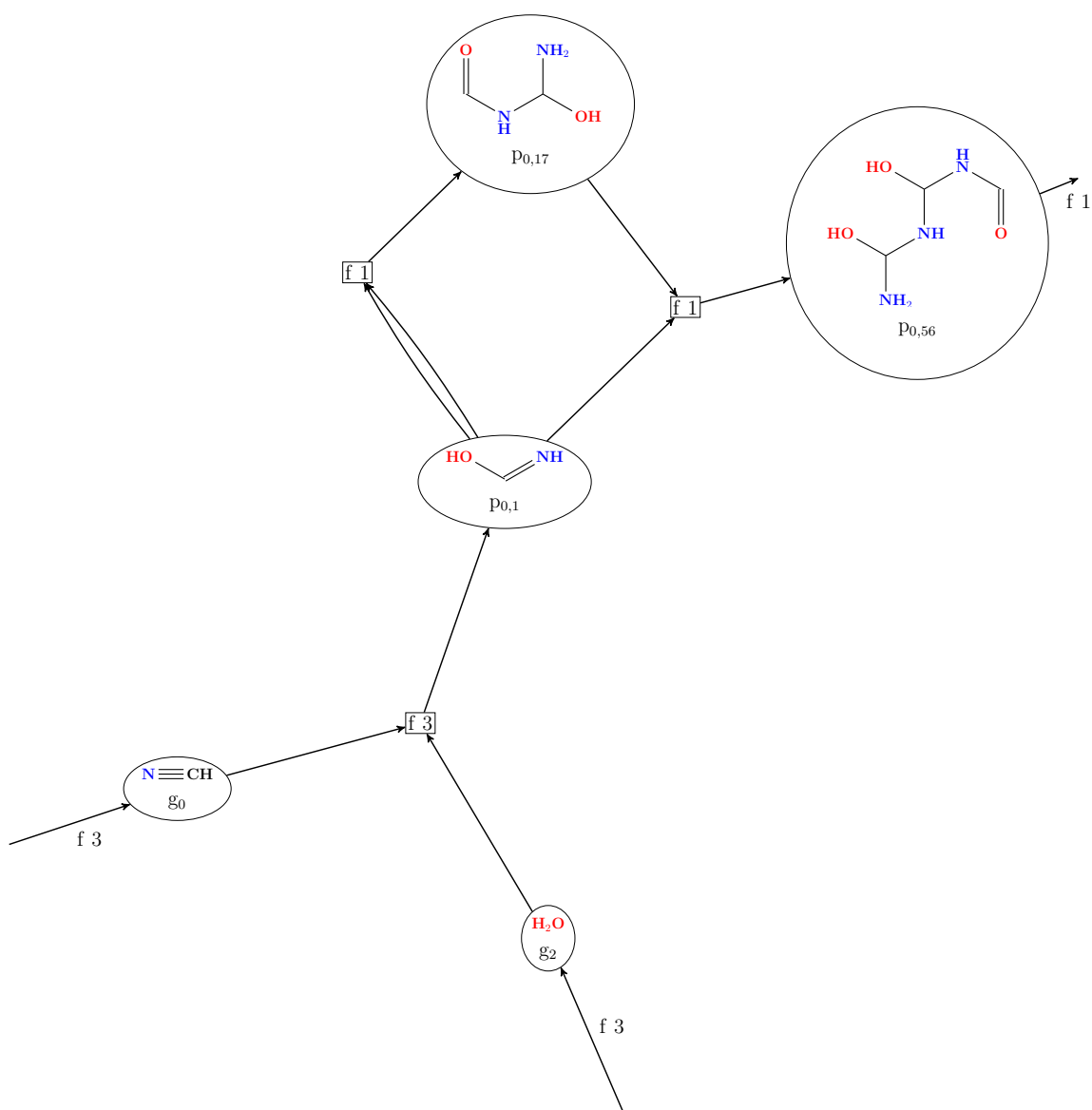
### 0.3.7 Solution 6

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	1.000000	20
$p_{\{0,17\}}$	0	0	-21.248844	1.000000	45
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	21
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

#### Filtered Graph



File: out/085\_dg\_0\_11100\_f\_0\_6\_filt



Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	20
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	21
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	45
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-95.748033	-95.748033
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-79.467287	-79.467287
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.619177	-35.619177
Sum					-210.89002701006757

$$\Delta G = -40.2330553936554$$

$$\Delta E = -0.08032376917478302$$

$$|E| = 5$$

$$|U| = 3$$

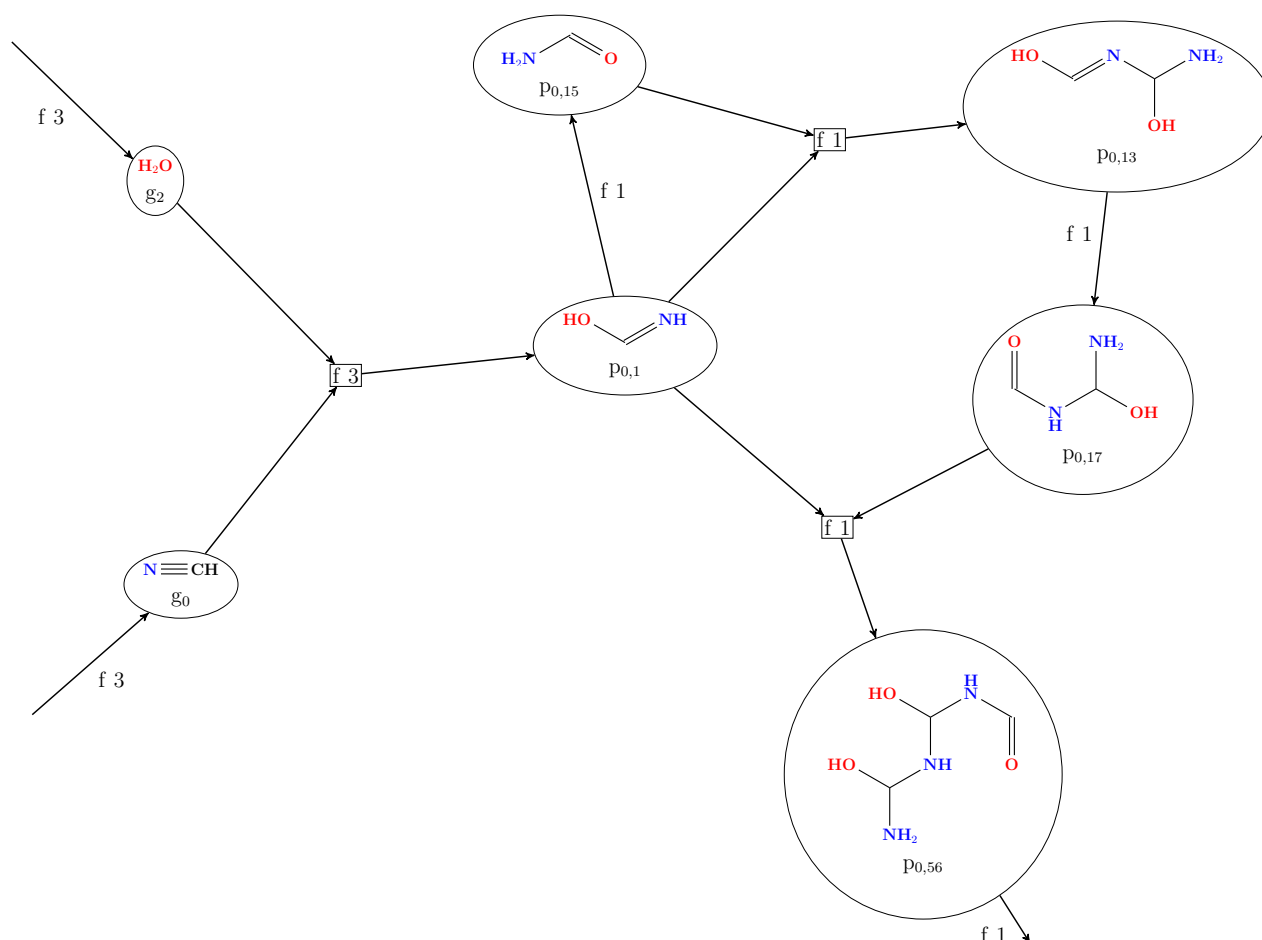
### 0.3.8 Solution 7

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	1.000000	0
$p_{\{0,13\}}$	0	0	-21.240635	1.000000	64
$p_{\{0,15\}}$	0	0	-10.625174	1.000000	62
$p_{\{0,17\}}$	0	0	-21.248844	1.000000	65
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	1
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/094\_dg\_0\_11100\_f\_0\_7\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.279594	1.0	-55763.953809	64
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	62
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	65
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-95.748033	-95.748033
36	$p_{0,1},$	$p_{0,15},$	1	-39.628622	-39.628622
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-18.285522	-18.285522
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.619177	-35.619177
250	$p_{0,13},$	$p_{0,17},$	1	-21.553143	-21.553143
Sum					-210.89002701006757

$$\Delta G = -40.23305513110544$$

$$\Delta E = -0.08032376917478302$$

$$|E| = 7$$

$$|U| = 5$$

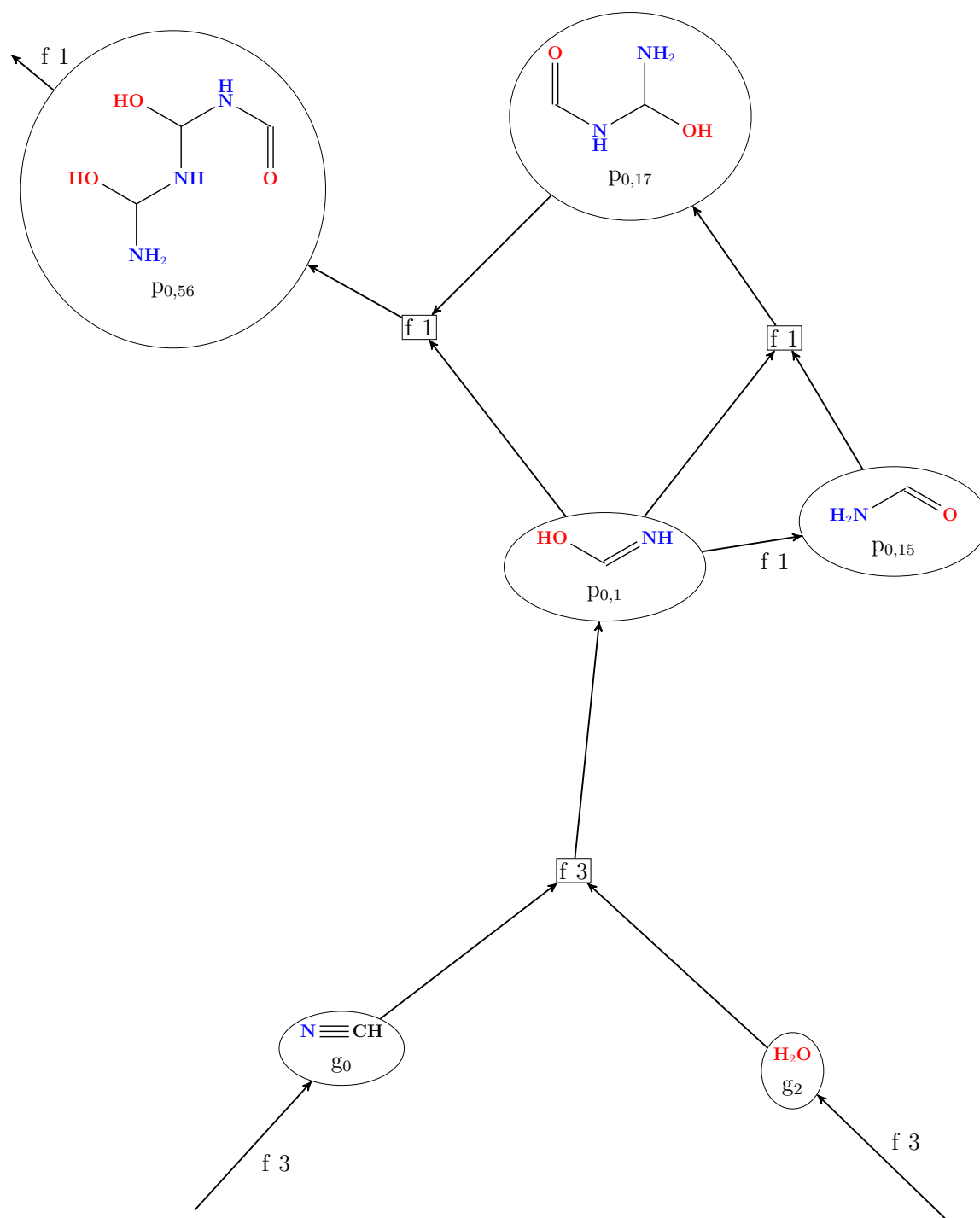
### 0.3.9 Solution 8

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	0.000000	0
$p_{\{0,15\}}$	0	0	-10.625195	1.000000	2
$p_{\{0,17\}}$	0	0	-21.248844	1.000000	65
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	1
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/103\_dg\_0\_11100\_f\_0\_8\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	0.0	-13306.144961	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,15}$	0	0	-27896.445756	1.0	-27893.119971	2
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	65
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-91.590802	-91.590802
36	$p_{0,1},$	$p_{0,15},$	1	-39.684415	-39.684415
183	$p_{0,1}, p_{0,15},$	$p_{0,17},$	1	-39.782872	-39.782872
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.619177	-35.619177
Sum					-210.89002701007223

$$\Delta G = -38.985886354110185$$

$$\Delta E = -0.0803237691747848$$

$$|E| = 6$$

$$|U| = 4$$

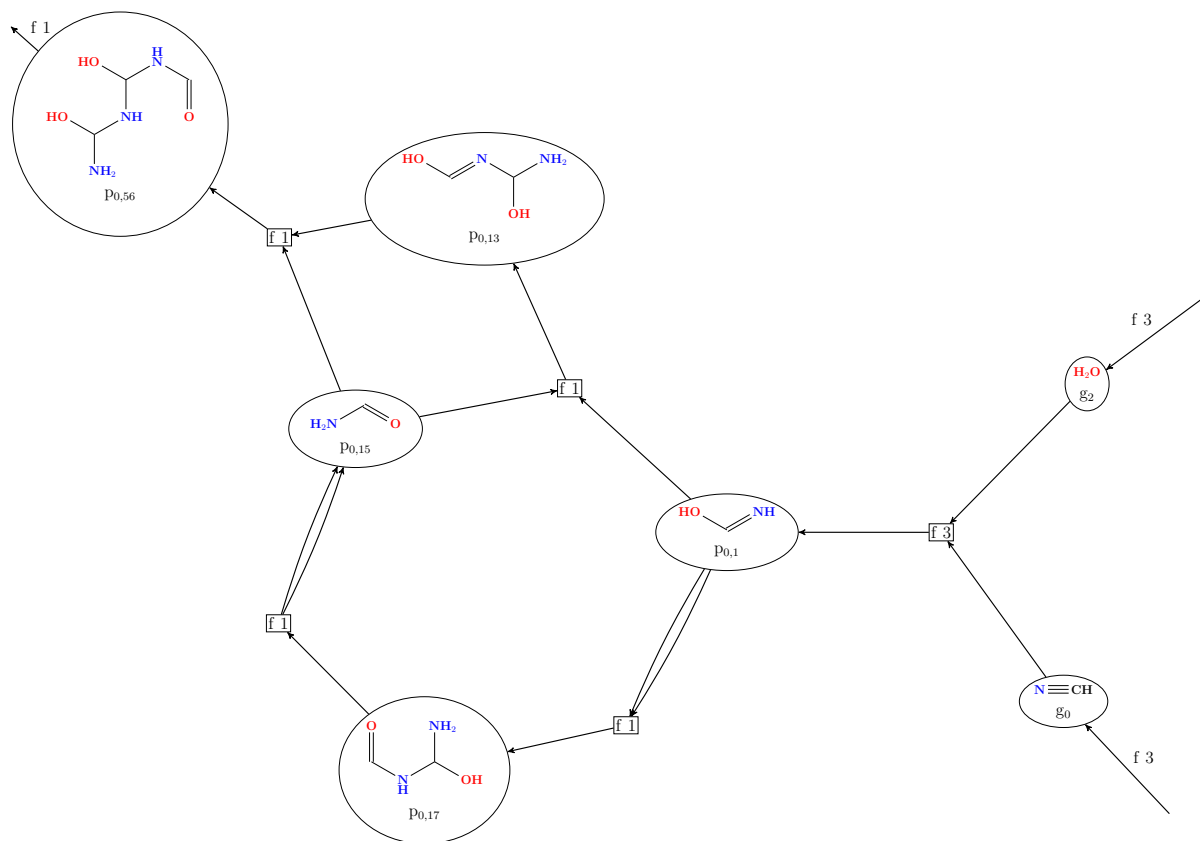
### 0.3.10 Solution 9

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068033	1.000000	11
$p_{\{0,13\}}$	0	0	-21.240678	1.000000	40
$p_{\{0,15\}}$	0	0	-10.625174	0.000000	26
$p_{\{0,17\}}$	0	0	-21.248887	1.000000	25
$p_{\{0,1\}}$	0	0	-10.610101	0.000000	12
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/112\_dg\_0\_11100\_f\_0\_9\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.118349	1.0	-13302.792564	11
$p_{0,1}$	0	0	-27856.817054	0.0	-27856.817054	12
$p_{0,13}$	0	0	-55767.391129	1.0	-55764.065344	40
$p_{0,15}$	0	0	-27896.389963	0.0	-27896.389963	26
$p_{0,17}$	0	0	-55788.944315	1.0	-55785.61853	25
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-99.98759	-99.98759
40	$p_{0,1}, p_{0,1},$	$p_{0,17},$	1	-71.152975	-71.152975
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-13.274931	-13.274931
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-10.02688	-10.02688
237	$p_{0,17},$	$p_{0,15}, p_{0,15},$	1	-7.992842	-7.992842
Sum					-210.8900270100629

$$\Delta G = -40.24103875040917$$

$$\Delta E = -0.08032376917478125$$

$$|E| = 7$$

$$|U| = 5$$

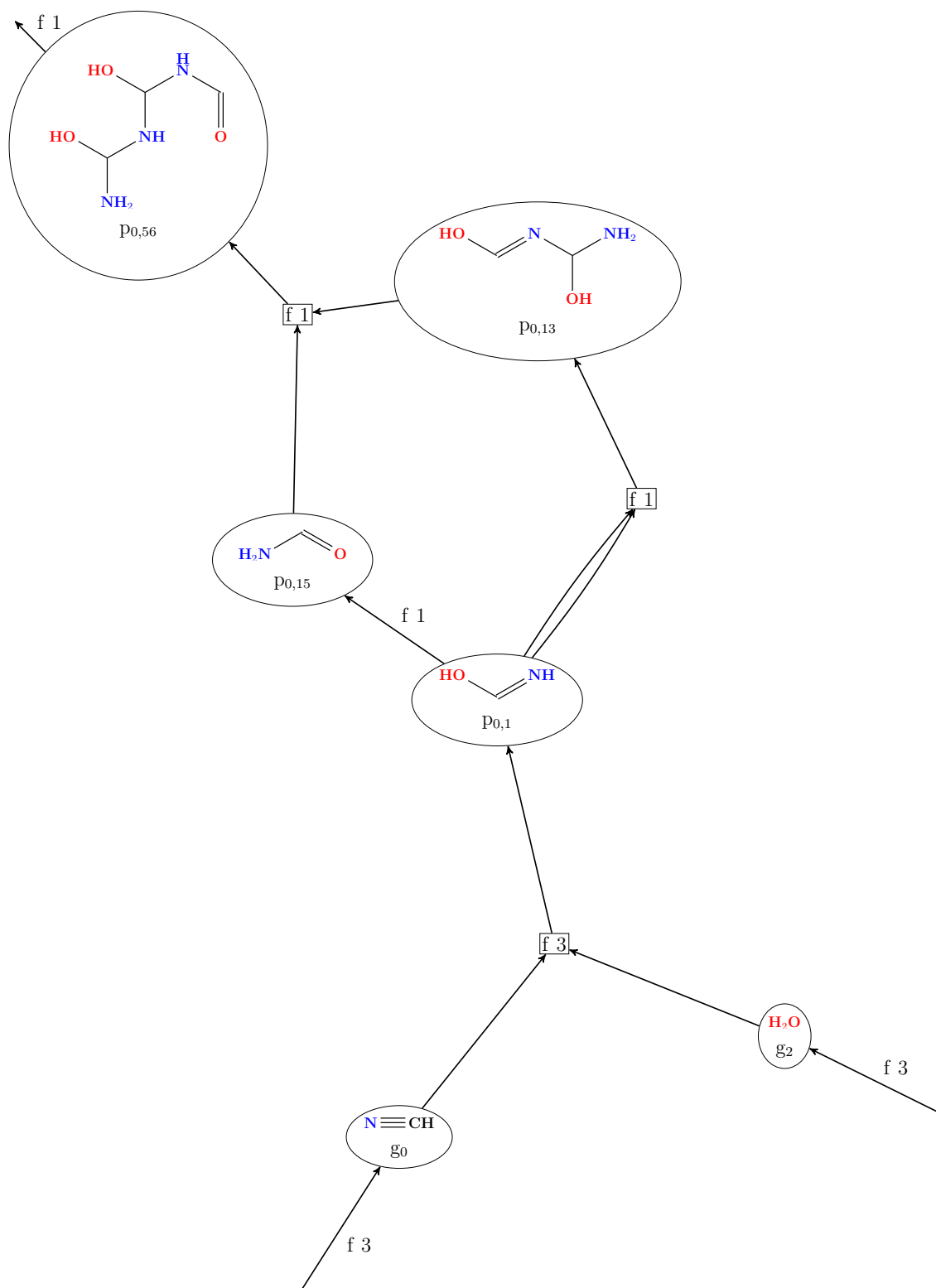
### 0.3.11 Solution 10

#### Overall Data

Objective value (non-integral): -0.0803238

Vertex/Graph	In	Out	G	logK	t_order
g_{0}	3	0	-5.507152	1.000000	0
g_{2}	3	0	-5.068033	0.000000	0
p_{0,13}	0	0	-21.240678	0.000000	43
p_{0,15}	0	0	-10.625174	0.000000	23
p_{0,1}	0	0	-10.610101	1.000000	21
p_{0,56}	0	1	-31.869260	1.000000	67

## Filtered Graph



File: out/121\_dg\_0\_11100\_f\_0\_10\_filt



Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.118349	0.0	-13306.118349	0
$p_{0,1}$	0	0	-27856.817054	1.0	-27853.491269	21
$p_{0,13}$	0	0	-55767.391129	0.0	-55767.391129	43
$p_{0,15}$	0	0	-27896.389963	0.0	-27896.389963	23
$p_{0,56}$	0	1	-83672.731446	1.0	-83669.405661	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-91.673128	-91.673128
30	$p_{0,1}, p_{0,1},$	$p_{0,13},$	1	-62.071483	-62.071483
36	$p_{0,1},$	$p_{0,15},$	1	-43.73014	-43.73014
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-4.793123	-4.793123
Sum					-210.89002701005973

$$\Delta G = -38.56141237559675$$

$$\Delta E = -0.08032376917478004$$

$$|E| = 6$$

$$|U| = 4$$

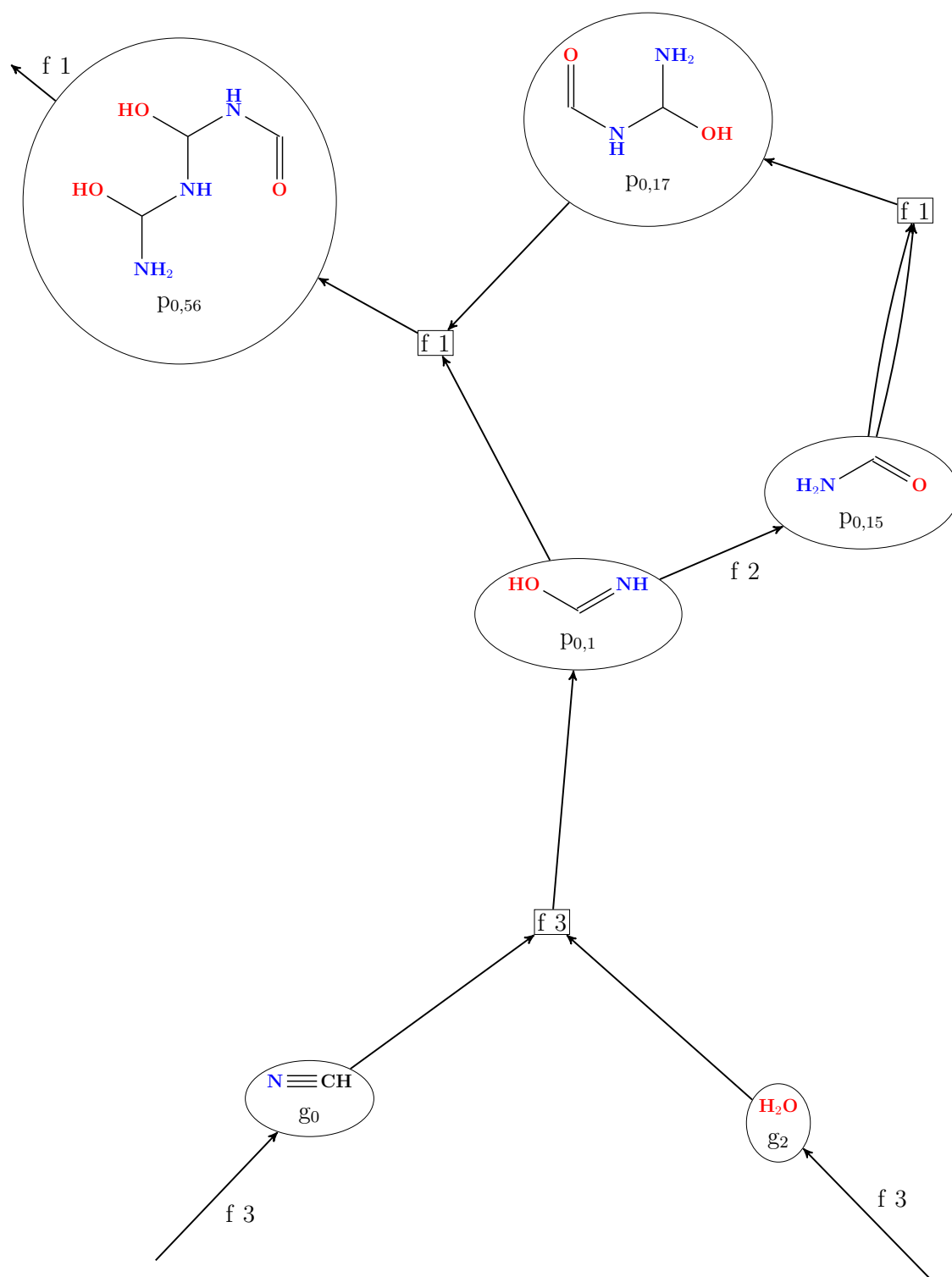
### 0.3.12 Solution 11

#### Overall Data

Objective value (non-integral): -0.06523

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	1.000000	0
$p_{\{0,15\}}$	0	0	-10.625174	0.974002	22
$p_{\{0,17\}}$	0	0	-21.248844	1.000000	45
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	21
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

## Filtered Graph



File: out/130\_dg\_0\_11100\_f\_0\_11\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	21
$p_{0,15}$	0	0	-27896.389963	0.974002	-27893.15064	22
$p_{0,17}$	0	0	-55788.832737	1.0	-55785.506952	45
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-95.748033	-95.748033
36	$p_{0,1},$	$p_{0,15},$	2	-39.7367	-39.7367
180	$p_{0,15}, p_{0,15},$	$p_{0,17},$	1	0.006113	0.006113
196	$p_{0,1}, p_{0,17},$	$p_{0,56},$	1	-35.619177	-35.619177
Sum					-171.26140490627395

$$\Delta G = -40.23305513110544$$

$$\Delta E = -0.06523002415654247$$

$$|E| = 7$$

$$|U| = 4$$

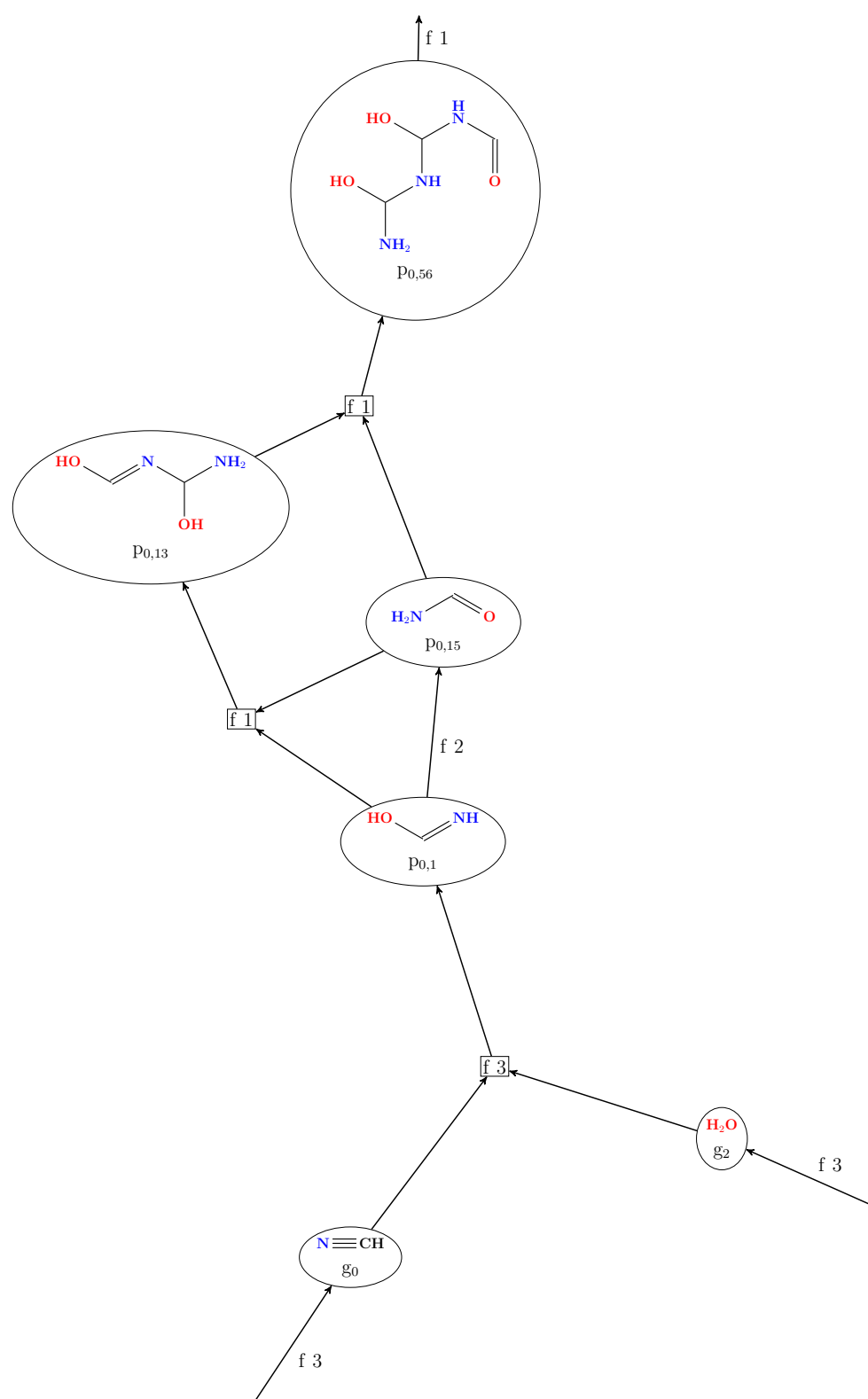
### 0.3.13 Solution 12

#### Overall Data

Objective value (non-integral): -0.06523

Vertex/Graph	In	Out	G	logK	t_order
$g_{\{0\}}$	3	0	-5.507152	1.000000	0
$g_{\{2\}}$	3	0	-5.068043	1.000000	0
$p_{\{0,13\}}$	0	0	-21.240678	0.000000	64
$p_{\{0,15\}}$	0	0	-10.625174	1.000000	2
$p_{\{0,1\}}$	0	0	-10.610080	1.000000	1
$p_{\{0,56\}}$	0	1	-31.869324	0.000000	67

# Filtered Graph



File: out/139\_dg\_0\_11100\_f\_0\_12\_filt

Vertex	InFlow	OutFlow	$x_v^{\Delta G^0}$	$x_v^K$	$x_v^{\Delta G}$	$t_v$
$g_0$	3	0	-14459.025578	1.0	-14455.699793	0
$g_2$	3	0	-13306.144961	1.0	-13302.819176	0
$p_{0,1}$	0	0	-27856.761341	1.0	-27853.435556	1
$p_{0,13}$	0	0	-55767.391129	0.0	-55767.391129	64
$p_{0,15}$	0	0	-27896.389963	1.0	-27893.064178	2
$p_{0,56}$	0	1	-83672.898792	0.0	-83672.898792	67

Hyperedge	Source	Target	Flow	$x_e^{\Delta G}$	$\bar{x}_e^{\Delta G}$
6	$g_0, g_2,$	$p_{0,1},$	3	-95.748033	-95.748033
36	$p_{0,1},$	$p_{0,15},$	2	-39.628622	-39.628622
169	$p_{0,13}, p_{0,15},$	$p_{0,56},$	1	-13.274931	-13.274931
192	$p_{0,1}, p_{0,15},$	$p_{0,13},$	1	-22.554288	-22.554288
Sum					-171.26140490626312

$$\Delta G = -40.2330553936554$$

$$\Delta E = -0.06523002415653835$$

$$|E| = 7$$

$$|U| = 4$$